User's Manual

Device:
Valhall

Version:
1.4

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By Digital Vision

Contents

1. Overview

About DVNR

The purpose of the DVNR Image Processor toolbox is to carry the instruments of the trade, to be instantly available to the craftsman. The tool shall be like an extension of the user's will; it must be effective but yet precise. A well-designed, maintained and applied toolbox is a source of power, power that can be transformed to performance, cost efficiency and competitiveness. Designed to solve real problems in real time.

The modular approach to the DVNR image processor offers many important advantages. Besides the most obvious advantage is the possibility to tailor the configuration to your requirements, thus avoiding unmotivated financial investments.

About Valhall

Valhall is a cutting-edge control system for image processing, which moves us to the forefront of the industry. We like to view Valhall as the heart of your work; a complete and comprehensive control system for tape- and disk based image processing.

The compact and customised new Valhall offers great economy, in addition to several user-friendly advantages in function and design. The modular system allows you to add on more functionality as your needs change and grow.

Valhall is the only control system that accesses the full potential of Digital Vision DVNR Image Processing tools.

2. Getting Started

About this Manual

This manual describes how to operate the DVNR500 and DVNR1000 from the Valhall control system.

Operations that can be performed both from the Graphical User Interface (GUI) and from the panels (Premium+ only) will be indicated by the two following symbols:

Panels

GUI
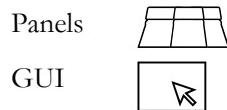
Panel Key Operations

Panel operations are clarified in the manual as follows:

Press

Press and Hold

 ...

Press and Hold is explained further on in this section.

Numerical entry
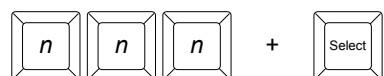
Numerical entry is explained further on in this section.

Timecode entry
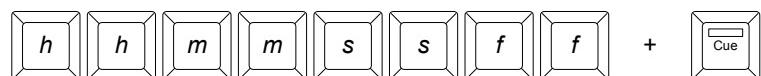
Timecode entry is explained further on in this section.

The Valhall System
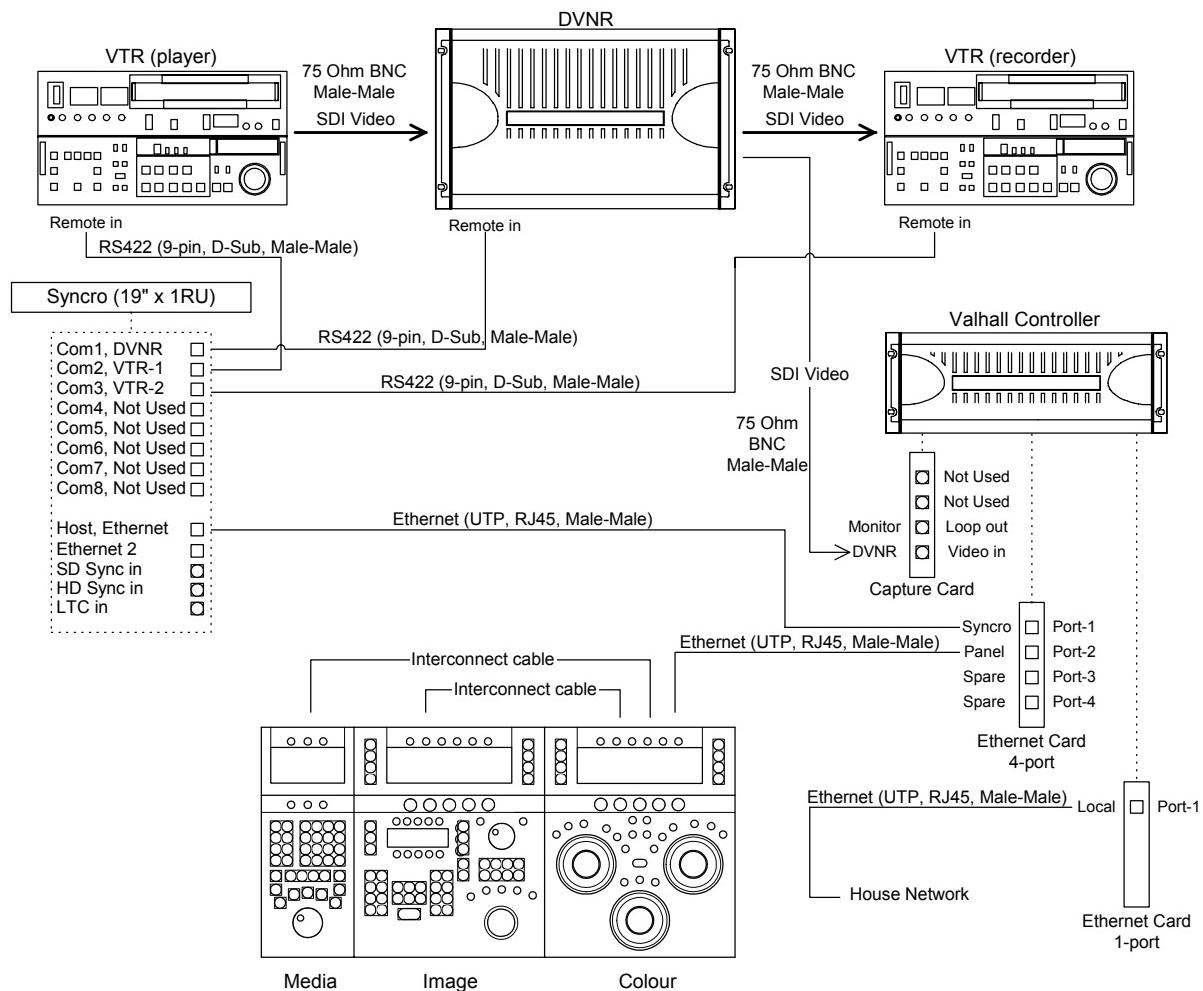
The Valhall system consists of:

Valhall System Controller

A Windows based platform running the Valhall application with plug-in based software architecture.

Valhall-Syncro

A 1RU box that connects to the DVNR Image Processing workstation, VTRs and/or DDRs.

Valhall-Image

An optional control panel for List management and Image Processing included in the Premium+ packages.

Valhall-Media

An optional editing and machine control panel included in the Premium+ packages.

Valhall-Colour

An optional dedicated colour grading panel included in the Premium+ Colour package.

Panels

This section describes some basics on panel operation necessary for the continued reading of this manual.

Press and Hold

Press and Hold means that the key is kept pressed for an extended duration, either to give the key two functions or to prevent accidental activation.

The time that needs to elapse is determined by the Press and Hold delay control on the Panels page of the User Profile window (see page 88).

Tip! Audio feedback can be provided to indicate when the key can be released. This function is available on the Sound page of the User Profile window.

Numerical Entry

Numerical entries (event number, note number etc) are normally done prior to pressing the function key. Both absolute (unsigned) and relative (signed) entries are supported for most operations.

Timecode Entry

Timecode entries are normally done prior to pressing the function key. Both absolute (unsigned) and relative (signed) entries are supported for most operations.

Tip! Leading zeros does not have to be typed in. E.g. 2:21 corresponds to timecode 00:00:02:21.

Mode Selection

Most keys on the Image panel are assigned for List operation. However, these keys can also be used for Notes, Bookmarks and Still store operation. This is determined by the Mode selection keys List, Note, Still and Bookmark.

Modifier keys

Valhall key

The modifier keys (Valhall, Shift & All) provide additional functionality when used together with other keys. A modifier key is either pressed and released before selecting the second key or held wild pressing the second key. This is normally represented in the manual by key1+key2.

GUI

This section will briefly describe the GUI of the Valhall application.

Toolbar

Workspace
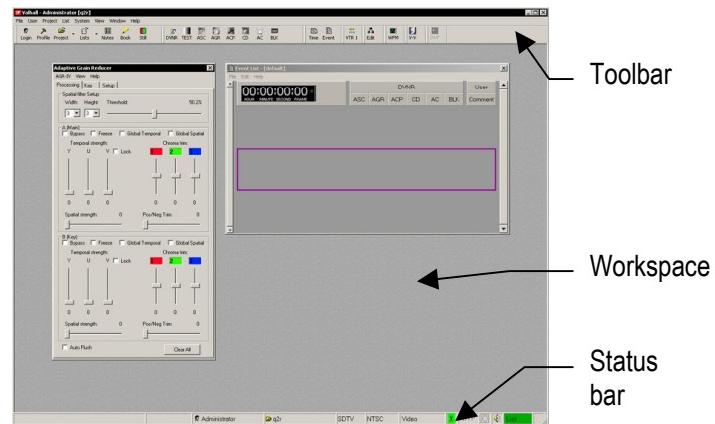
Status bar
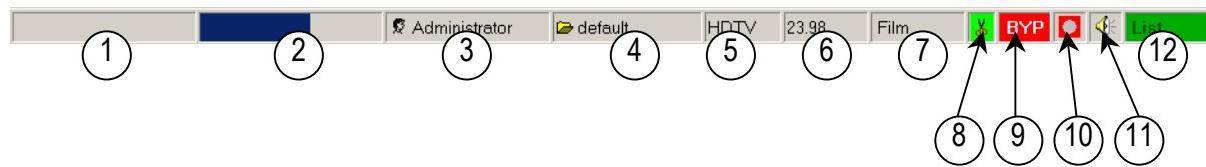
Status bar

On the lowest part of the screen is a status bar, displaying various system settings, error messages etc:

1. Message box: Shows different type of messages; information, warnings etc.

2. Progress bar: Displays progress on time consuming operations and communications with Valhall Syncro

3. User logged in

4. Project name

5. Standard: HDTV/SDTV

6. Field rate

7. Film/Video origin

8. Autoshot On/Off (click to toggle)

9. Bypass All On/Off (click to toggle)

10. Preview functions On/Off: Indicates if a preview function like split, show hit or similar is activated in one or more DVNR processing options (click to shut off)

11. Audio feedback On/Off (click to toggle)

12. Panel Operating mode (List/Notes/Bookmarks/Still)

Toolbar

At the top of the workspace a number of buttons are found. They represent the different processing options. Clicking on one of these buttons will open the corresponding window. Keeping Shift pressed on the keyboard while clicking on the button will close the window.

Tip! If a window for some reason is "off-screen", it can be positioned in the upper left corner by pressing <ctrl> on the keyboard while clicking on the corresponding button at the top of the workspace.

Login

The login dialogue (automatically available when starting the Valhall) prompts you to login using your profile. The same dialogue is also used to logout and exit.

Read more on page 10.

User Profile

In the User Profile window you can personalise the list behaviour, operation of control panels and more. All settings are stored separately for each User and recalled upon login.

Read more on page 79.

Projects

A project is like a folder containing lists, notes, default settings etc. Projects can be personal or shared with other users.

Read more on page 23.

Lists

A List keeps the programmed colour gradings etc. Numerous lists can be stored within a project.

Read more on page 24.

Notes

Notes are used for temporary storage of processing parameters, similar to Presets.

Read more on page 59.

Bookmarks

Bookmarks are used to mark parts in the material on the fly for later attention, typically indicating large pieces of dirt needing special attention after a colour grading pass.

Read more on page 55.

Still Store

Valhall provides an optional integrated still/reference store. Still store operation is mainly performed from the Image panel.

Read more on page 55.

DVNR Setup

The DVNR setup is used to configure the DVNR Image Processing workstation.

Read more on page 99.

DVNR Processing

Valhall provides the best control of the DVNR Image Processing tools. At the top of the toolbar there is a number of buttons representing the available processing options.

Read more on page 113.

Event List

The Event List is used to program processing settings on a scene or a frame basis.

Read more on page 27.

Timeline

Valhall Premium only.

The Timeline provides an alternative view to the Event List. It has a look similar to timelines of editing systems.

Read more on page 29.

Machine Control

Valhall can control up to 4 VTRs or DDRs. In addition to controlling them from the Media panel in the Premium+ package, they can be controlled from both the GUI and from the keyboard (if mapped in the User Profile dialogue).

Read more on page 13.

Editing

Linear editing is supported for up to 4 machines. Edit points can be entered manually or automatically from selections in the list.

Read more on page 63.

Video Viewer

Valhall Premium only.

The re-sizeable Video Viewer provides real-time monitoring of the DVNR output. The video viewer also provides zoom capabilities for regions of interest.

System Configuration

The System configuration determines how your Valhall system is set-up; type of DVNR, number of VTRs/Disks, timing etc. The System configuration is accessed from the menu File > Configurations > System.

Read more on page 17.

Help System

You can for most dialogues call up help by pressing <f1> on the keyboard when they are in focus. The Help System can also be started from the menu Help > Contents…

Tip! If a window can be opened from a key on one of the control panels, it usually can be closed from the same key by a press and hold operation.

How to use the timecode edit box

`00:00:00:00`
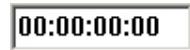
The timecode edit box normally appears as shown in the picture above.

Entering timecode with digits

When selecting the edit box, the cursor appears on the right side. To delete the entire content in the edit box press <Del>. A new timecode can be entered using the numeric keypad. Separators are inserted automatically and the timecode is always right aligned with the two rightmost digits indicating frame count.

By pressing <backspace>, the rightmost digit is deleted and can be retyped.

Pressing the<,> (comma) key or the <.> (period) key inserts a double zero (00) into the timecode edit box. Both characters are used because most keyboards have the dot or comma located next to the <0> (zero) key on the numeric keypad.

Trimming timecode

The up and down arrows on the keyboard increase or decrease the timecode by one frame.

If <Shift> is held down the timecode will increase or decrease by seconds and if <Ctrl> is held while using the arrow keys minutes can be added or subtracted.

Both <Shift> and <Ctrl> together with the up and down arrows will increase or decrease the timecode by hours.

Field based timecode edit boxes

Most edit boxes also accept field selection. The field is selected by pressing <*> (asterisk) which is normally located on the numeric keypad as a single key.

Starting a Project

After powering up the Valhall controller (and optional control panels), you can start the Valhall application by double-clicking on the Valhall icon at the desktop or selecting Programs > Digital Vision > Valhall from the start menu.

Login

When the Valhall application has started, the Login dialogue window will appear.

Double-click on the User account you want to login as or click and hit <Return>.

Select the proper User account. If you haven't got one, ask the administrator to create one for you. If the User account has a password, you will have to enter it. Click on the Login button. You are now logged in and the User login window will disappear. The settings/preferences you had when you exited the program last time will now appear again.

Starting a Project

After login, the Valhall start-up dialogue will appear. The following options are available:

- Open one of the recent projects
- Directly open one of the recent lists in the displayed project
- Create a new project
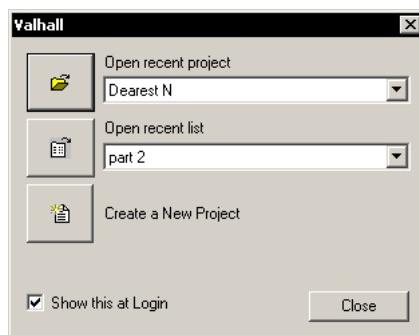
Select **New** to start a new project or **Open** a previously stored project.

Note! Only projects previously created with the same user account will be visible.

Creating a new Project
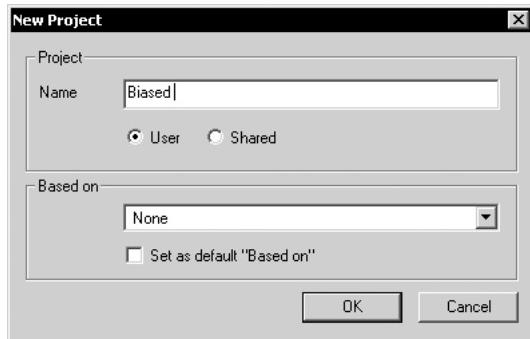
If creating a new project, enter the name of the project.

A new project can be based on an older one or on a template, inheriting all project settings.

If "Set as default Based on" is checked, the selected project will appear as "Based on" every time the New Project dialogue is shown.

Click on **OK** when done.

Selecting a System Configuration

A project is associated with a specific System Configuration; a DVNR configuration and a configuration of devices for playback and recording.

If a new project has been created, a prompt for the selection of a system configuration will appear once the Valhall start-up dialogue is closed.

Note! If no suitable system configuration is available and/or if this is the first time the system is used, a system configuration has to be set up. Read more about system configuration on page 18.

Setting Video Standard

Open the DVNR setup window and check that proper input, output, field rate etc. are correctly set before starting the session by clicking on OK.

Read more about the DVNR setup on page 99.

Saving Lists

Lists can be saved in two different ways

1. Go to the top menu List and choose Save or Save as.
2. From the Image panel, press and hold the Save key.

Note! It is recommended that the list be given a specific name instead of default by choosing "Save as" in the List menu.

3. Machine Control

General

Valhall can control up to 4 VTRs or DDRs. In addition to controlling them from the Media panel in the Premium+ package, they can be controlled from both the GUI and from the keyboard (if mapped under Keyboard in the User Profile dialogue).
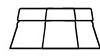
You can define exactly how the Media panels tape transport controls will behave under Media keys in the User Profile dialogue (see page 90).

Tip! VTR controls can be mapped on keyboard keys F5 – F12 on the Keyboard page of the User Profile dialogue.

Note! The machines must be set to use Sony VTR Protocol.

Cue to a specific Timecode
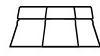
Enter the timecode on the numerical keypad of the Media panel and then press the Cue key,
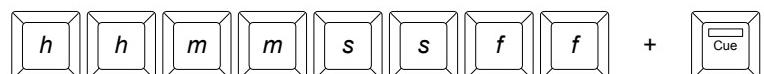
To e.g. cue the machine 10 frames back, enter –10 and then press the Cue key. Alternatively enter 10 and then press the rewind or the fast forward key to go back or forward.

In the Cue field of the VTR window, enter the timecode and then press <ins> on the keyboard.

To e.g. cue the machine 10 frames back, enter 10 and then press the minus (-) key on the keyboard.
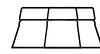
Cue one Machine to another Machine

The Media panel provides ways of cueing one machine to another machine:

1. Press the upper leftmost key to enable the main menu

```
   ●      ○      ○
┌──────────────────────┐
│ ▼                    │
│ VTR1  00:01:25:02    │
│ VTR2  00:25:25:02    │
│ VTR3  01:00:07:11    │
│ VTR4  01:00:07:12    │
└──────────────────────┘
   ○      ○      ○
```
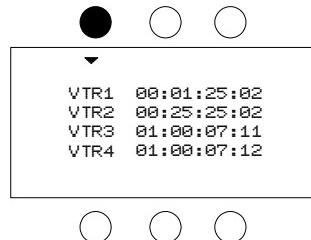
2. Press the Cue key to enter Cue mode

```
   ○      ○      ●
┌──────────────────────┐
│ ▲    Edit   Cue      │
│ VTR1  00:01:25:02    │
│ VTR2  00:25:25:02    │
│ VTR3  01:00:07:11    │
│ VTR4  01:00:07:12    │
└──────────────────────┘
   ○      ○      ○
```

3. Select the machine to cue up

VTR 2

4. Select the machine to cue up to

```
   ○      ○      ○
┌──────────────────────┐
│ ▲     In    Out      │
│ VTR1  00:01:25:02    │
│ VTR2  00:25:25:02    │
│ VTR3  01:00:07:11    │
│ VTR4  01:00:07:12    │
│                      │
│ VTR1  VTR3   VTR4    │
└──────────────────────┘
   ●      ○      ○
```
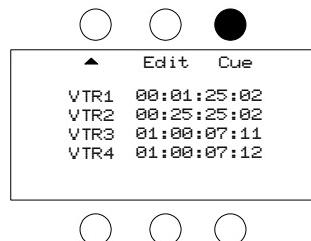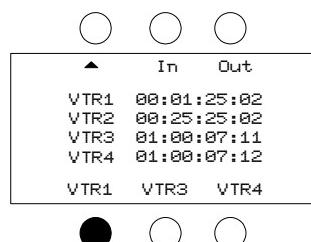
Tip! Once the Cue mode has been enabled, it can remain on the display and steps 1-2 does not need to be repeated.

Cue all Machines to one Machine
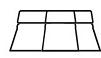
To cue all machines to the position of e.g. VTR1, press the All key on the Image panel followed by the VTR1 key on the Media panel.

All + VTR 1

All Stop
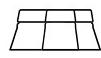
To stop all machines, press the All key on the Image panel followed by the stop key on the Media panel

All + ■

VTR Menu

The VTR menu in each VTR window provides additional machine commands (e.g. Eject, PB/EE) not supported by the control panels
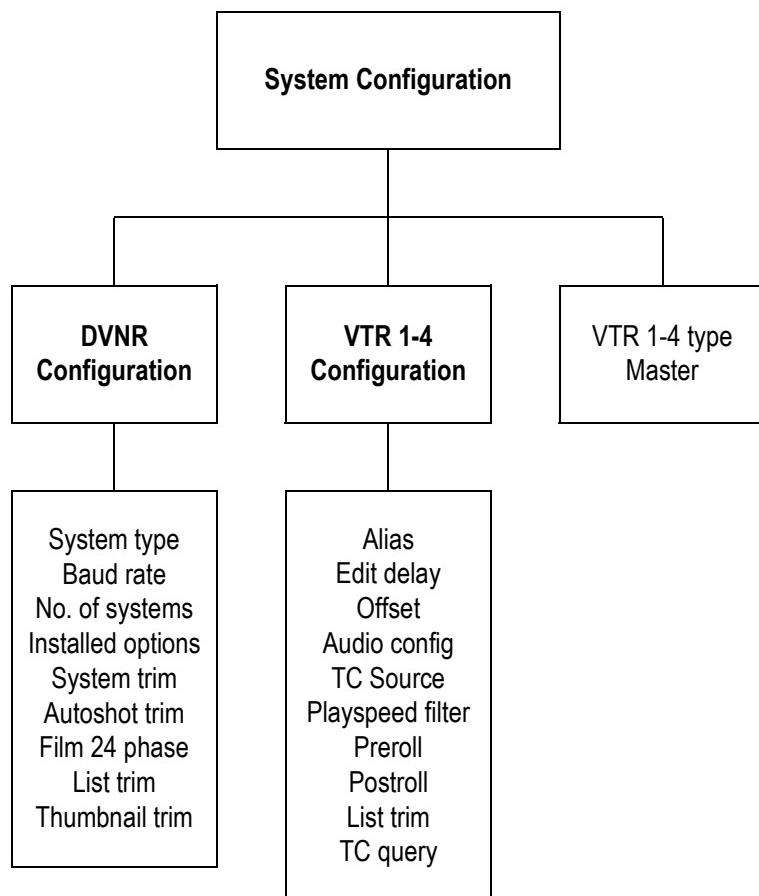
Play
Reverse Play
Stop
Rewind
Fast Fwd
Preroll
Review
Record ▶
PB/EE Mode
PB/Tape
Eject

4. System Configuration

General

```
                    ┌─────────────────────┐
                    │                     │
                    │ System Configuration│
                    │                     │
                    └─────────────────────┘
                              │
          ┌───────────────────┼───────────────────┐
          │                   │                   │
   ┌──────────────┐    ┌──────────────┐    ┌──────────────┐
   │     DVNR     │    │   VTR 1-4    │    │  VTR 1-4 type│
   │Configuration │    │Configuration │    │    Master    │
   └──────────────┘    └──────────────┘    └──────────────┘
          │                   │
   ┌──────────────┐    ┌──────────────┐
   │ System type  │    │    Alias     │
   │  Baud rate   │    │  Edit delay  │
   │No. of systems│    │    Offset    │
   │Installed opt.│    │ Audio config │
   │ System trim  │    │  TC Source   │
   │ Autoshot trim│    │Playspeed filt│
   │ Film 24 phase│    │   Preroll    │
   │  List trim   │    │   Postroll   │
   │Thumbnail trim│    │  List trim   │
   └──────────────┘    │   TC query   │
                       └──────────────┘
```

The system configuration associates a specific DVNR system, i.e. a DVNR configuration, with a number of specific VTRs, i.e. VTR configurations.

Multiple system configurations can be stored. This is very useful when different DVNRs or different VTR set-ups are used with the same Valhall control system.

A project always has to be associated with a system configuration. The selection is found in the menu Project > Settings.

System Configuration
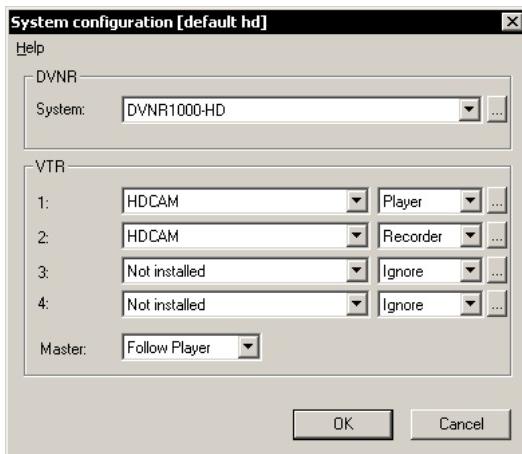
The system configuration associates a specific DVNR system, i.e. a DVNR configuration, with a number of specific VTRs, i.e. VTR configurations.
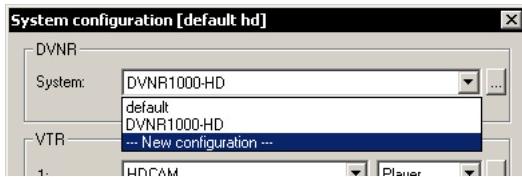
New DVNR or VTR configurations can be added by selecting New Configuration in the respective drop-down list.

In addition, the selected configuration in the list can be edited by clicking on the more (...) button to the right of the drop-down list.

Read more about DVNR and VTR configurations further on.

The System configuration can be accessed from menu File > Configurations > System.

Either select an available system configuration and click on the Edit button (or double-click directly on the configuration) or click on new to create a new configuration.

DVNR

Selects a DVNR configuration.

VTR

Set the number of VTRs connected and selects specific VTR configurations. This affects the appearance of the Edit dialogue.

A VTR can be set to be a player or a recorder. To exclude a machine from editing, select Ignore.

Master

Defines the master timecode source. All offsets entered are relative to the master.

DVNR Configuration
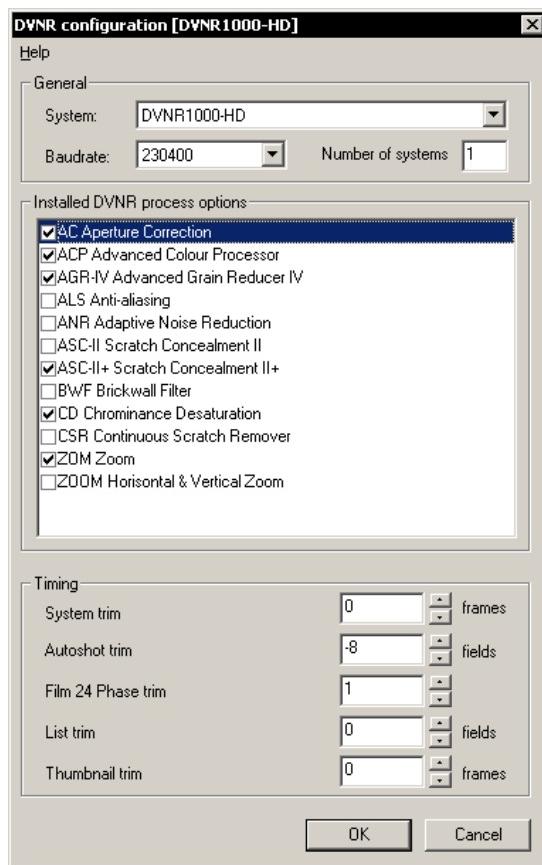
The DVNR configuration determines the type of DVNR (SD/HD), options that are installed and timing. Several configurations can be stored. This enables a quick changeover to another DVNR unit with a different configuration.

Specific DVNR input/output settings found in the DVNR setup dialogue are stored separately in the project.

The DVNR configuration can be accessed from menu File > Configurations > DVNR…
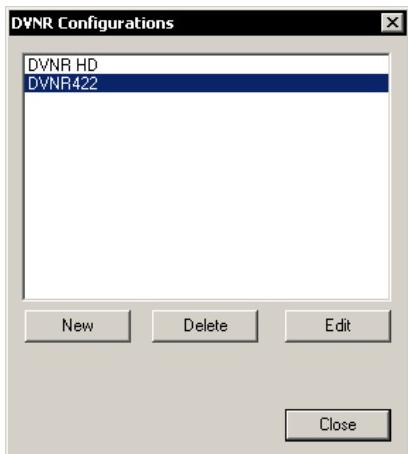
Either select an available DVNR configuration and click on the Edit button (or double-click directly on the configuration) or click on new to create a new configuration.

General

System
Selects the type of DVNR connected.

Baudrate
The baudrate that the DVNR communicates with the Valhall control system.

Default baudrate is 230400.

Number of systems
Number of DVNR systems cascaded.

Timing

The parameters in the Timing section are used for trimming Autoshot and parameter execution timing.

System trim
System trim can be adjusted in order to compensate for any external equipment, adding extra delay, between the player and the recorder.

Autoshot trim
Adjusts the timing between the timecode source and the scene change detector in the DVNR.

Film 24 Phase trim
Adjusts the 3:2 phase controlled from the list.

List trim
Adjusts the timing between the timecode source and the parameters executed in the DVNR at an event.

Thumbnail trim
If the thumbnails for some reasons are not correct, adjust Thumbnail trim to grab the first frame of the scene.

VTR Configuration
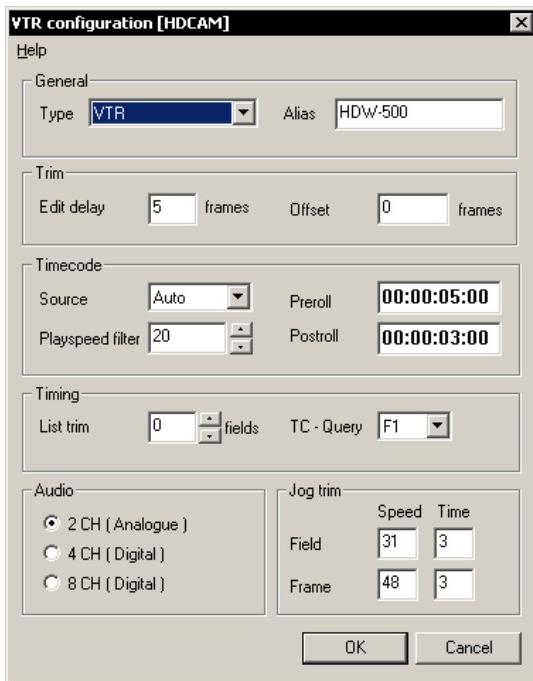
The VTR configuration can be accessed from menu File > Configurations > VTR…

Either select an available VTR configuration and click on the Edit button (or double-click directly on the configuration) or click on new to create a new configuration.

General

Type
Select the type of device; VTR, DDR (Digital Disk Recorder) or DVS-DDR (DDR from Digital Video Systems).

It is necessary to select DVS-DDR if playlists are to be used with a DVS server.

Alias
The user definable alias is used to easily identify each machine.

Trim

The Edit delay trims the edit points on the recorder while the Offset compensates for the delay between the player and recorder introduced by other equipments. These parameters are adjusted on the recorder.

Timecode

Source

Normally set to Auto. On some tapes, however, LTC may differ from VITC. In this case, select the timecode source that is correct.

Playspeed filter

The playspeed filter is used to e.g. prevent false autoshots as the machine goes from stop to play.

Preroll

Normally set to 5 seconds.

Some machine may require a longer preroll to synchronise during editing.

Postroll

Normally set to 3 seconds.

Timing

List Trim

Normally set to 0.

Only used for factory testing.

TC Query

Normally set to Field 1 (F1).

For some machines, especially in 24P/PsF this parameter may have to be set to Field 2 (F2) if editing is not working correctly.

Audio

Use this control to indicate the Audio capabilities of the machine.

Jog Trim

Use this control to set up field and frame step.

Field/Frame Fwd/Rew Jog functions can be found in the VTR group when defining the programmable keys.

The Frame Fwd/Rew functions (also available in the VTR group) can be used by machines supporting 1 frame cue ups.

- A higher speed and shorter time gives quick field/frame stepping but is less accurate.

- A lower speed and longer time is more accurate but less quick.

5. Project Management

General
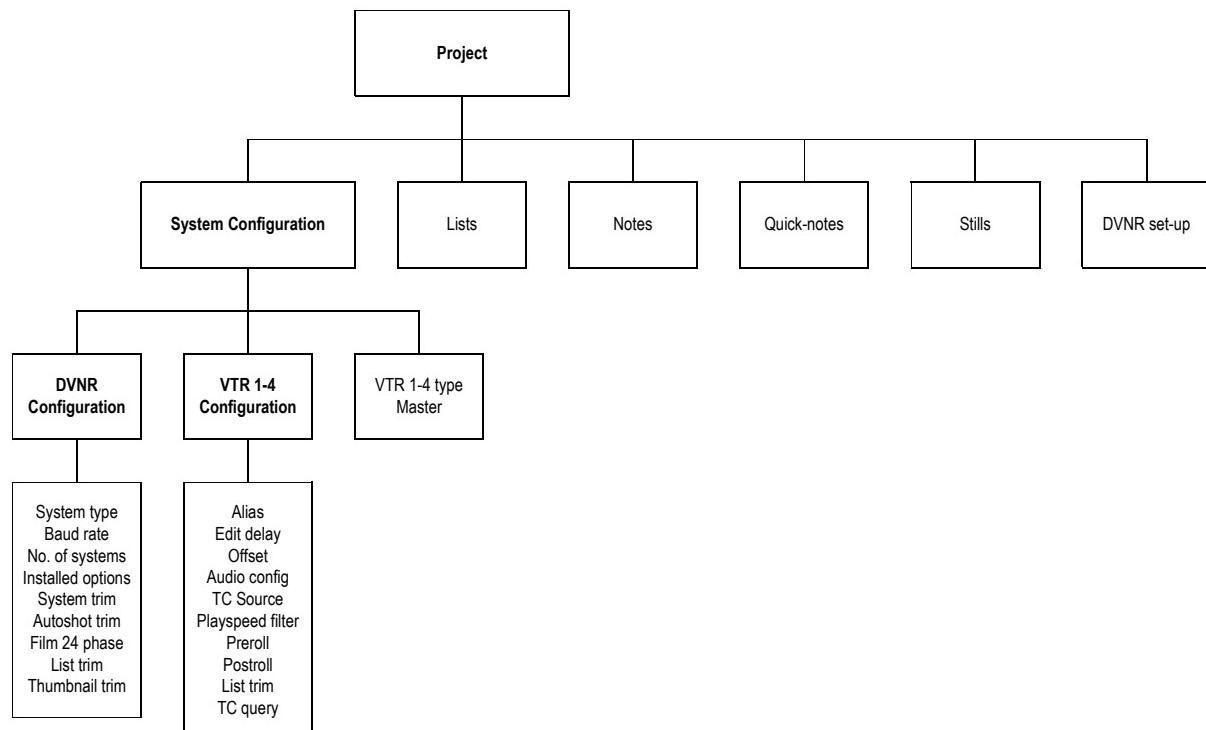
A project is like a folder containing lists, notes, DVNR settings etc. Projects can be personal or shared with other users.

Project Browser
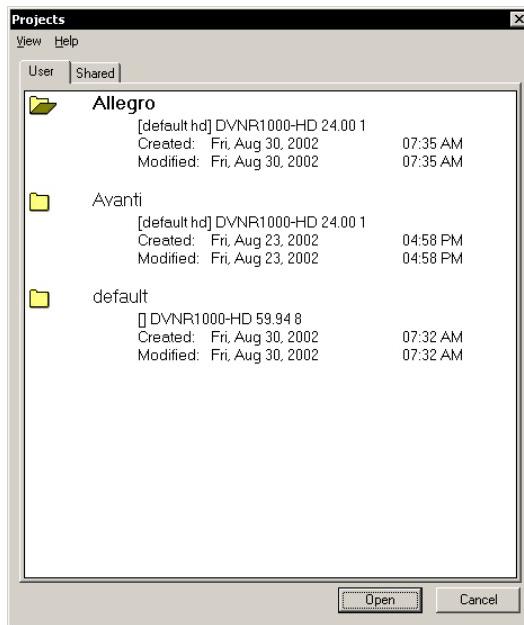
The Project Browser is used to open an existing project. More detailed information about the project such as system configuration, video standard and more is available.

To access the Project Browser, go to menu Project > Open

List Browser
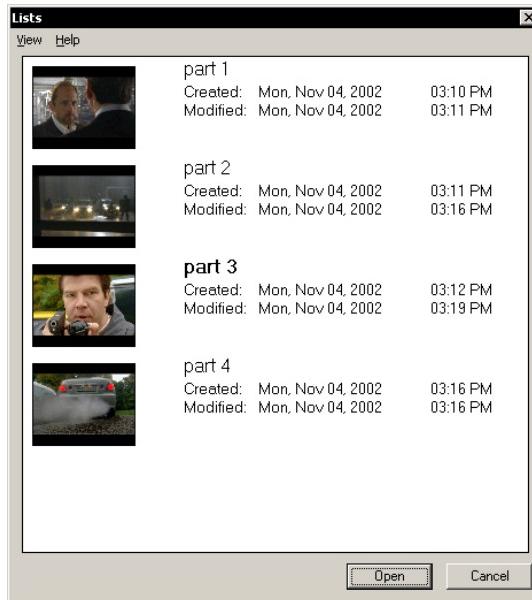
The List Browser is used to open a list within the current project.

In Valhall Premium a thumbnail representing the first event in the list is available.

To access the List Browser, go to menu List > Open

Project Manager
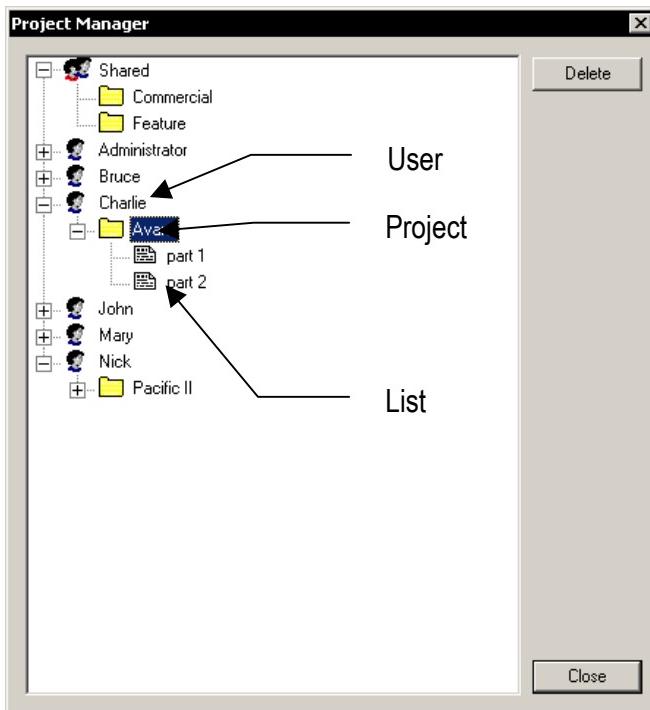
The Project Manager (found under menu Project) allows the operator to move or copy projects or lists between users and also between personal and shared folders.

Project management can be restricted in the User Management dialogue.

Moving

To move a project or a list, drag the item to the desired destination.

Copying

To copy a project or a list, keep the ctrl key on the keyboard pressed and drag the item to the desired destination.

Deleting

Select the Project or list to delete and the click on the Delete button at the top of the project manager.

Renaming

Click twice on the name of the project or list (not a double-click) to rename.

6. List Management

About the List Management

When a change of processing parameters has to be done frame accurately, list management has to be involved.

Valhall gives the option to use both a vertical compressed event list and a horizontal timeline (Valhall Premium only).

⚠️ **Note!** List operations from the control panels (Valhall Premium+ only) can only be performed as long as the List key on the Image panel is lit.

Event list

Event List

You can open or put the timeline on top by pressing the List key on the Image panel. Press and hold to close.

If the Event List is selected as the secondary list, you must use the Valhall+List keys.

The Time Code Reader display at the top shows the current timecode of the source machine (VTR1).

The list has two types of indicators/cursors:

The **Current event**, which is associated with the current timecode (machine position), is displayed with a blue border/cursor.

The **Active** event, to which all list operations are applied to, is displayed with a red border/cursor (also known as the List cursor). The Active event can be chosen independently of the Current event.

Normally the Current and the Active events are one and the same and will be displayed with a purple border/cursor.

To summarize, list operations are normally applied to the event with the purple or red border (cursor).

In the case where selections have been done to one or many events (which will turn blue), list operations are applied to these and not the current/active event.

Note! Right-clicking on an event in the event list will also recall and execute its parameters.

Double-clicking on an event will cue up the connected source machine to the associated timecode. If the event is active on field 2, the machine will be positioned at field 1 one frame later.

The Event information

The information given at each event is as follows:

Event number

The event numbers are automatically rippled as new events are entered.

Timecode

The timecode associated with the event. Field 2 is indicated with an asterisk (*).

Scene

Scene/cuts are indicated with a pair of scissors. This is done automatically when the autoshot detector creates a new event.

To manually set an event to be or not to be a cut, right-click and select Scene from the pop-up menu. For some processing options it is important that this flag is set correctly.

Field-dominance

Indicates the field dominance (F1/F2) in 50Hz/25fps or 60Hz/30fps film originated material. In 60Hz/24fps film originated material, the field in the 3:2 pull-down sequence is displayed as A1, A2, B1, B2, B3 etc. in black. A broken 3:2 sequence is indicated with red characters.

Film/Video

A film frame indicates film-originated material, while the diagonal stripes indicate video originated material.

Comment

Shows the text entered after pressing <F2> on the keyboard. Events can be found, in the Search menu, by their comments.

Tip! To change the list layout and amount of information shown, go to the List layout page in the User Profile.

The Event indicator
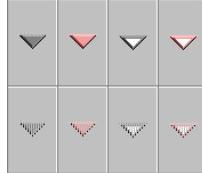
The Event indicator lets you know for each process list whether an event is programmed or not, if an option is in bypass, if a key area is used etc. The following indicators are used:

None	No parameters programmed
Grey	Parameters programmed
Red	Bypass
White fill	Key area used

In addition, some indicators may appear dimmed to let you know that the settings are identical to the ones in the previous event. This feature can be enabled by checking the Dim Identical Settings control under the List layout page in the User Profile dialogue (see page 84).

Timeline
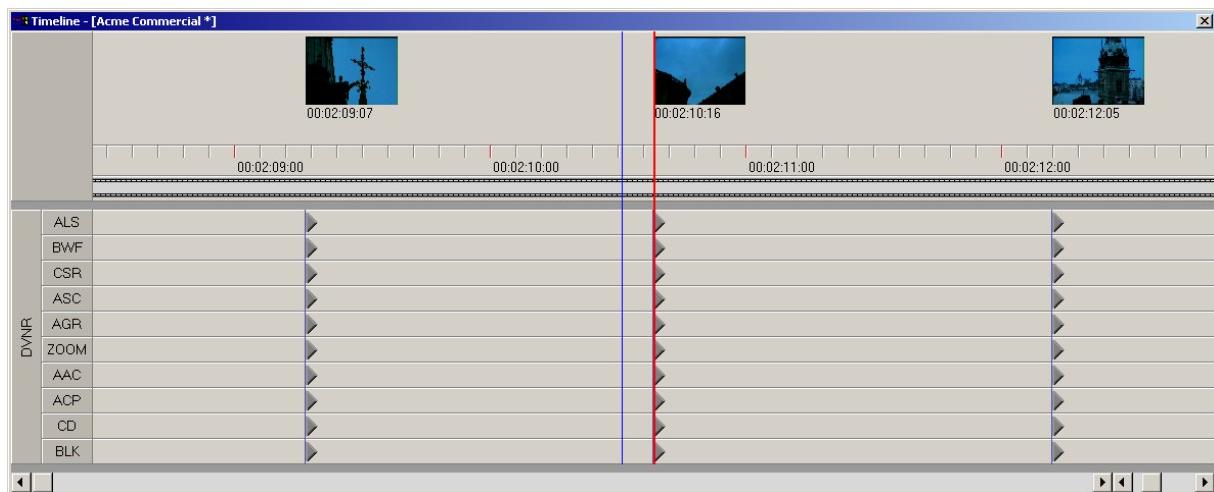
Timeline

You can open or put the timeline on top by pressing Valhall+List on the Image panel. Press and hold to close.

If the Timeline is selected as the primary list, use the List key only.

The blue line indicates the position of the source machine (current event) while the red line represents the list cursor (active event).

The wipe wheel on the Image panel is normally used to browse the timeline while the buttons to the right and left of the wheel is used to zoom in and out of the timeline.

The larger left-most scrollbar at the bottom is used to browse the timeline. The smaller right-most scrollbar at the bottom is used to zoom in and out of the timeline.

Note! Clicking somewhere in the timeline will cue the source machine to the same location.

Tip! To change the list layout and amount of information shown, go to the List layout page in the User Profile.

List Control bar

The list control window is primarily used when no control panels are available. The control window is automatically opened when Valhall starts and stays on top of every other window. It can be closed with the upper right button and opened again by accessing the top menu Window > List control.

Functions are explained further on.

Building a List

The starting point for a tape-to-tape job is to build a decision list consisting of separate sections with different processing parameters. For colour correction, the list typically consists of events located at the scene-changes or cuts.

When building the list either an edit decision list (EDL) or the built in scene-change detector can be used to automatically generate events.

Building a list using Autoshot

- Select **New** in the List tab of the Project Manager
- Rewind the source tape to the start of the program to process
- Enable Autoshot

Autoshot will build a list consisting of blank events with no parameters programmed. When parameters are changed the changes in the present event will be the starting point in the successive event. E.g. the change will be "carried over" to next events.

- When the tape has played through the whole program, rewind the tape

Tip! In the User Profile, Autoshot can be made to automatically turn off in order not to create any false events when the tape is played back before the last event. This function is called "Autoshot – Disable inside list"

- Make sure that **Set On Exit** is enabled when you begin grading. In that way the operator does not need to store the parameters manually when going from one event to the next

Building a list using an Edit Decision List

- Select **Import EDL** in the **List** menu
- Select the EDL file and hit <Enter>. If another extension is used than EDL, type *.* in the File Name edit box

A list of non-programmed events will be generated. The events will be located at the recorder in-points where straight cuts (including video) have been made.

At the operator's preference, the settings from the first event and onward can be changed. Each change/parameter set-up that is stored will be the one used in the next event as well.

If each event shall have the same starting point, e.g. zero settings in the colour correction, then:

- Set-up the control parameters and colour grading you want the whole list to use as default
- Select all events by choosing **All+Select**
- Press the **Enter** key. All events will be programmed with the same parameters as the first event

Now all events have the same basic settings and the operator can start grading.

Working with the List

General

The operator plays the source VTR and monitors the picture on the video monitor. If colour correction is to be performed, a list consisting of all scene changes/cuts has probably been made using one of the two methods described in the previous sections.

If only noise reduction, scratch/dirt removal and/or other image enhancement processing are used, a pre-generated list is not necessary. The operator will only mark events where the processing needs to be optimised.

Neither does the operator have to pre-build the list for colour correction. Autoshot can be enabled at all times as it only generates events when the tape is running. That way the operator can run the VTR, stop after a scene-change, apply grading, and play further until the next scene-change.

The only drawback is the ability to move quickly from scene to scene, only spending the necessary time to make the colour correction. A list with all scene-changes marked is then necessary to be able to cue up between scenes.

Programming Events

The easiest way to program or update the decision list is to use **Set On Exit** (found on the List page of the User Profile dialogue) as no confirmation is needed for changes. The changes are stored when the VTR is played into next or previous event.

To avoid an update of the event, a "Recall event" must be done before entering the next event.
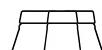
To manually program an event, press the Enter key on the Image panel.

```
Enter
```
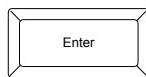
If "Set changes only" is enabled in the User Profile dialogue (see page 81), only the changes will be programmed. To force all settings to be programmed, press All+Enter.

Click on the Set button in the List Control bar to manually program an event.

Alternatively right-click on the event at select Set from the pop-up menu to program the event.

Clearing Settings

By clearing settings, the event becomes unprogrammed, i.e. it will have the same status as a "marked" event.

First select the events to clear settings in and then press the Clear key on the Image panel.

First select the events to clear and then select Clear from the Edit menu or right-click on the event and select Clear from the pop-up menu.

Alternatively click on the Clear button in the List Control bar.

Clearing Settings by Event number

The settings of an event can be deleted without having to press the Select key first by entering the event number and then pressing the Clear key. You can also specify a range of events by number by using the "," key. Examples:

100	Clears Event 100
150,200	Clears Events 150 through 200
,150	Clears all Events up to 150
200,	Clears all Events from 200 and forward
-10,+10	Clears 10 events before and after the list cursor
-2,10	Clears 2 events before the list cursor up to event no. 10

Recalling Settings

Position the list cursor on the event to recall and press the Recall key on the Image panel.

To recall e.g. event number 100, enter 100 on the numerical keypad and press Recall. To recall an event located 4 events back, type -4 and then press Recall.
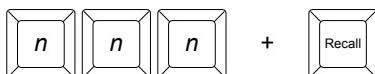
Settings can also be recalled while browsing the list using the up/down arrows by simultaneously keeping the Valhall button pressed.

Note! If "Recall on scroll" in the List section of the User Profile has been enabled, the list cursor is moved and the parameters are recalled when using the arrow keys only. If the Valhall key is kept pressed, the parameters are not being recalled while scrolling.

Press <Ctrl>+r on the keyboard (while the Event list or the Timeline is in focus) or right-click in the information field to the left in the Event List to recall settings. By right-clicking in a specific processing list, only the corresponding settings will be recalled.

Alternatively click on the Recall button in the List Control bar to recall settings from the current event.

Tip! The function of recalling while browsing can be programmed on function keys. This is found in the List group as "Scroll up + recall" and "Scroll down + recall"

Previewing an Event
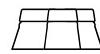
To preview the effects of the stored settings, press the Valhall key followed by the Event key on the Image panel. The machine will start playback three seconds before the event and return to the original position three seconds after passing the event.
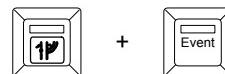
To enter a loop mode, first press the Valhall key and then press and hold the Event key. Press the Stop key on the Media panel to exit the loop mode.

Click on the Play button in the List Control bar.

Inserting an Event

To insert a new event at the current source machine position, press the Mark key on the Image panel.

Alternatively enter the timecode on the Media panel and then press the Mark key.
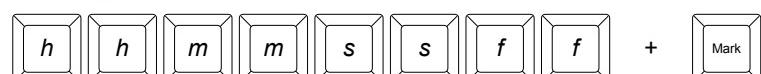
To e.g. insert a new event one frame earlier than the current source machine position, first enter –1 on the Media panel and then press the Mark key.

In addition, when keeping the Mark key pressed, the current settings are also programmed.

Enter an event by first pressing the <Insert> key on the keyboard and then either pressing the VTR button in the dialogue that pops up in order to enter an event at the machine position or enter the timecode manually.

```
Insert event                                    ✕
 Insert event at timecode
 ┌───────┐┌──────────────┐  ┌────────┐  ┌────────┐
 │ VTR >> ││00:01:00:00   │  │   OK   │  │ Cancel │
 └───────┘└──────────────┘  └────────┘  └────────┘
```

Alternatively, click on the Mark button in the List Control bar to enter an event at the machine position.

When clicking on the MarkSet button, the current settings are also programmed.

Deleting Events

To delete an event or a range of events, press the Delete key on the Image panel.

First select the events to delete and then press the <Delete> key on the keyboard, select Delete from the Edit menu or right-click on the event and select Delete from the pop-up menu.

Alternatively click on the Delete button in the List Control bar.

Deleting Events by number

An event can be deleted without having to press the Select key first by entering the event number and then pressing the Delete key. You can also specify a range of events by number by using the "," key. Examples:

100	Deletes Event 100
150,200	Deletes Events 150 through 200
,150	Deletes all Events up to 150
200,	Deletes all Events from 200 and forward
-10,+10	Deletes 10 events before and after the list cursor
-2,10	Deletes 2 events before the list cursor up to event no. 10

Inserting one-frame Events

Sometimes it is necessary to create one-frame events e.g. for scratch removal with a key area.

Place the source machine at the frame where the one-frame event is to be created. Ensure the settings you want to program are correct.

Press the Frame key on the Image panel.

A new event is created at the current position, programmed with the current settings. Unless an event already exists, there will be one programmed one frame later with processing parameters restored.

Click on the Frame button in the Control list bar.

Tip! To preview the effects of the stored settings, press the Valhall key followed by the Frame key on the Image panel. The machine will start playback three seconds before the one-frame event and return to the original position three seconds after passing the event.
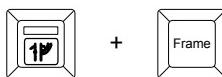
To enter a loop mode, first press the Valhall key and then press and hold the Frame key. Press the Stop key on the Media panel to exit the loop mode.

Updating Thumbnails

Thumbnails are normally updated when the source machine enters an event in normal play speed. This feature can be disabled in the List tab of the User Profile (see page 81).

To manually update the thumbnail at the active event, press and hold the Enter key on the Image panel.
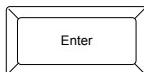
Browsing the List

Valhall provides functionality to jump between events for previewing or copy/paste of event settings using the list cursor.

The list cursor can be moved independently of the source machine position.

The machine can be placed at the list cursor position at any time by pressing the Cue key on the Media panel.

Alternatively press and hold the Event key on the Image panel.

Stepping Up and Down

Press the Up or Down key to step up or down an event in the list.
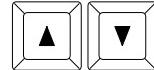
▲ ▼

Note! If "Recall on scroll" in the List section of the User Profile has been enabled, the list cursor is moved and the parameters are recalled when using the arrow keys only. If the Valhall key is kept pressed, the parameters are not being recalled while scrolling.

While the Event list is in focus, use the up and down keys to step up or down.

To move the list cursor a number of events at the time, use the page up or page down key.

Jump to Event Number

Enter the event no on the numerical keypad and then press the Event key. If the Event key is kept pressed, the source machine is also placed at the entered event.

n n n + Event
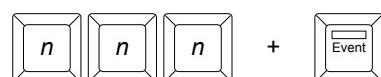
To e.g. go three events forward, enter "+3" followed by the Event key.

Jump to the First Event

Enter "0" or "1" on the numerical keypad of the Media panel and then press the Event key on the Image panel.

0 + Event

While the Event list is in focus, press Home on the keyboard.

Jump to the Last Event

Enter a number on the numerical keypad of the Media panel that is larger than the last event number (e.g. 9999) and then press the Event key on the Image panel.

9 9 9 9 + Event

While the Event list is in focus, press End on the keyboard.

Return to Machine Position

Press the Event key to place the list cursor at the source machine position. Additionally, as soon as the source machine leaves still or stop mode, the list cursor will automatically follow the machine position.

Event

Working with Selections

Normally list operations are applied to the event where the list cursor is placed. To apply an operation to more than one event "Selections" can be made.

Note! Once one or more selections have been done, operations are applied to these and not the event where the list cursor is placed.

In order to apply a series of operations to the same selected events, these remain selected until manually unselected.

Selected events turn light blue. Just in case the selected events are not visible when the list has been scrolled up or down, blue lines are shown in the Event list scrollbar and the Select key on the Image panel is lit up.
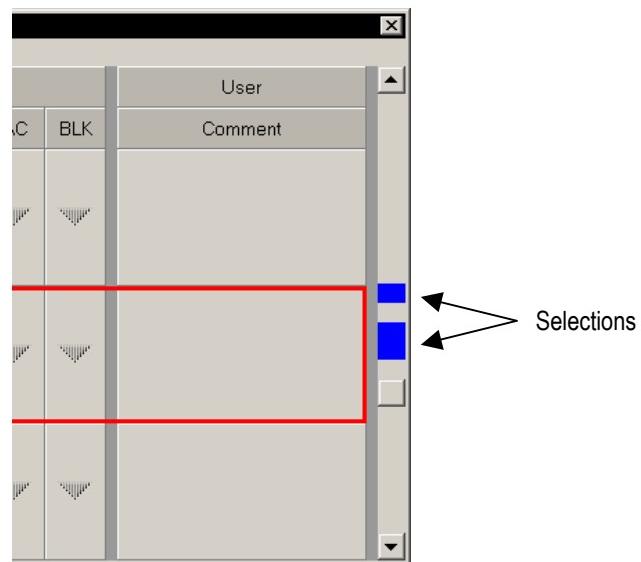
Selecting an Event
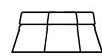
Position the list cursor at the event to be selected and press the Select key.

To unselect, press and hold the Select key.
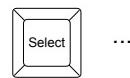
Keep the Ctrl key on the keyboard pressed while clicking on an event to toggle selection. Alternatively browse to the event using the up and down keys and then press the space bar to toggle selection.

Selecting a range of Events
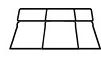
Place the list cursor at the first event in the range, press the Shift key and keep it pressed while pressing the Up or Down key.
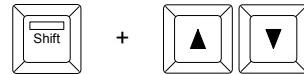
Place the cursor at the first event in the range, press the Shift key on the keyboard and keep it depressed while pressing the Up or Down key. Alternatively, using the mouse, click on the first event in the range and then keep the shift key on the keyboard pressed while clicking on the last event in the range.

Selecting an Event by number
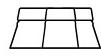
An event can also be selected by its number, by entering the Event no. on the Media panel and pressing the Select key on the Image panel.
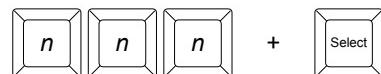
To e.g. select an event 3 events later (of the list cursor), enter +3 and press the Select key

Same operation applies to unselect but with the difference that one have to press and hold the Select key.

Selecting a range of Events by number
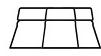
You can also specify a range of events by number by using the "," key. Examples:

150,200	Select Events 150 through 200
,150	Selects all Events up to 150
200,	Selects all Events from 200 and forward
-10,+10	Selects 10 events before and after the list cursor
-2,10	Selects 2 events before the list cursor up to event no. 10

Same operation applies to unselect but with the difference that one have to press and hold the Select key.

Inverting a Selection
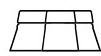
First press the Valhall key followed by the Select key.

In Event list select menu Edit > Invert selection.

Selecting all Events
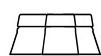
First press the All key followed by the Select key.

Select menu item Edit > Select all in the Event List window.

Alternatively press <Ctrl>+a when the Event List or Timeline is in focus.

Unselecting All

First press the All key and then press and hold the Select key.
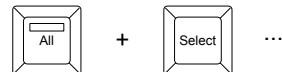
Simply click on an event to unselect all events or select menu item Edit > Deselect all in the Event List window.

Alternatively press <Ctrl>+i when the Event List or Timeline is in focus.

Comments

Adding a Comment

Ensure List mode is selected and that the list cursor is at the proper position in the event list, press <f2> on the keyboard, enter text and press return.

In the Event list, right-click in the comment field to the right, wait for cursor, enter text and press return.

Searching for a Comment

To find an event based on a comment, select **Edit > Find comment…** in the Event List. Enter the word to search for. If a comment matches your search criteria, the list cursor is automatically placed at that event. Press <f3> to find next event to meet your search criteria.
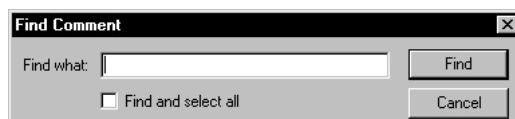
Search and Select

To select all events matching your search criteria, enable Find and select all. The list cursor will be placed at the first selected event.

Note! Selections made prior to the "Find and select all" operation will be lost.

Using Dynamics
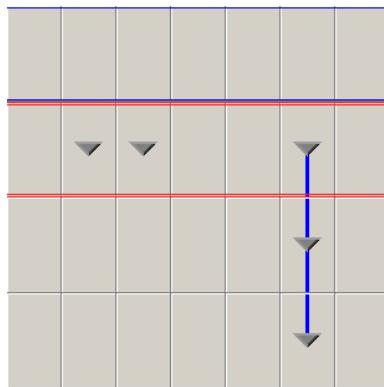
Two consecutive dynamics   *Overlapping dynamics*
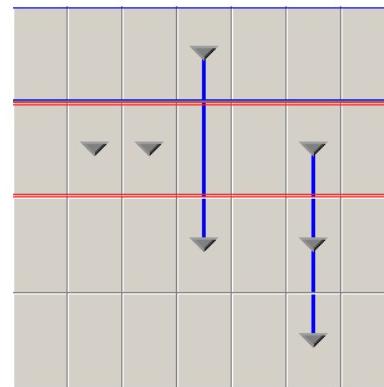
A dynamic is a transition in time between two sets of parameters, typically colour gradings or pan-and-scan.
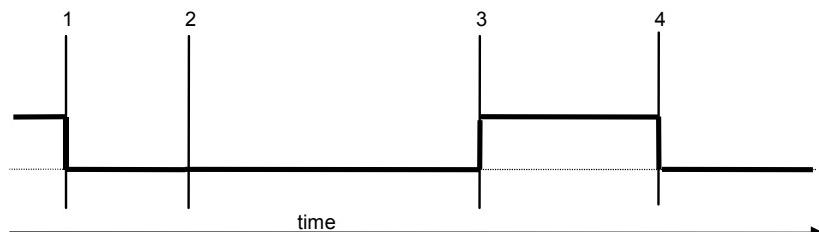
Figure 1: Sequence in Decision list without dynamics
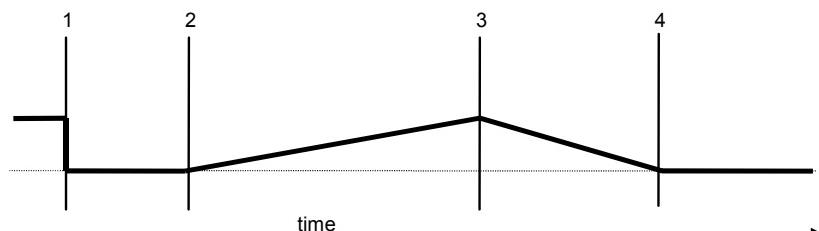
Figure 2: Same sequence in Decision list but with dynamics

The following is an example of how a dynamic can be programmed in the list (figure 2 above shows the changes of a parameter e.g. gamma):

1. This event is a normal cut, parameters stored with Set.

2. This is the In- or start-point of the 1st dynamic. Unless the dynamic should start with other parameters than the previous event, ensure that both the previous event and the start of the dynamic contain the same settings every time one of them is changed. Note that this is not necessary when "Dynamic start follow previous event" has been set in the List section of the User Profile. Read more below.

3. Out-point of the 1st dynamic. Parameters stored with Set Dynamic. This event will automatically become the in-point of next dynamic (if any).

4. Out-point of 2nd Dynamic.

Setting a Dynamic
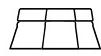
Define your In- and out-point with two programmed events. On the second, press the Dyn key on the Image panel.

To remove a dynamic, press and hold the Dyn Key.

To enter a dynamic, right-click on the second event and select Dynamic On from the menu or click on the Dyn button in the List Control bar

To remove a dynamic, right-click on the second event and select Dynamic Off from the menu or click on the Dyn- button in the List Control bar.

Dynamic start follows previous event

When changing settings in the event prior to the dynamic, the settings in the start of the dynamic will always follow.

When changing settings at the dynamic start, the icon will change to an arrow and the previous event will not match the dynamic start.

Note! This is only available if "Dynamic start follows previous event" has been set in the List section of the User Profile.

Non-linear Dynamics
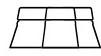
Non-linear dynamics or s-curves are also provided in addition to the normal linear dynamic.

The different dynamic curves can be accessed by repeatedly pressing the Dynamic key:

- Blue line = Linear start/stop
- Green line = Non-linear start & linear stop
- Cyan line = Linear start & non-linear stop
- Red line = Non-linear start/stop

To change dynamic curve type from the GUI, right-click on the second event and select Linear, S – Linerar, Linear – S or S – S.

Setting Default Dynamics
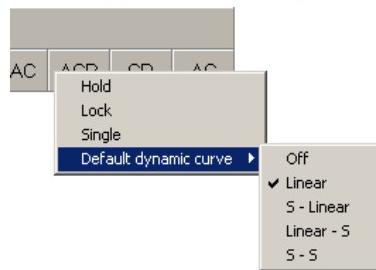
For options supporting dynamic transitions, the default dynamic curve (i.e. the type of curve that is enabled the first time the Dyn key is pressed for an event) can be set. Right-click on the option in the list and from the pop-up menu select "Default dynamic curve".

For those options not supporting dynamic transitions, the only choice will be "Off".

Extended Information

By resting the mouse cursor on top of an event with a dynamic, extended information like in-/out-point, duration and type of dynamic, is being displayed as a pop-up.
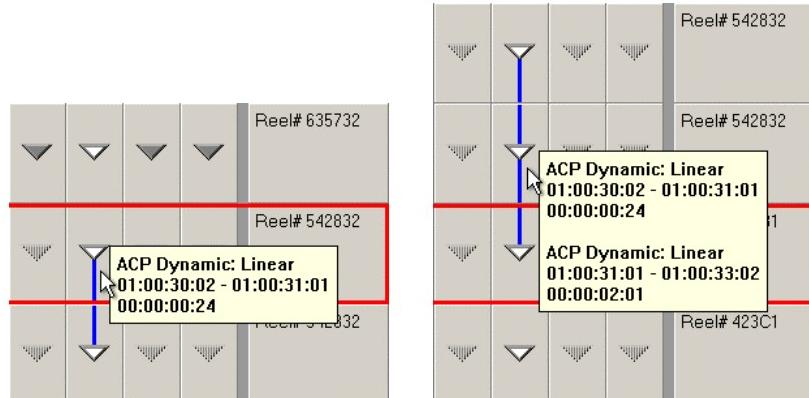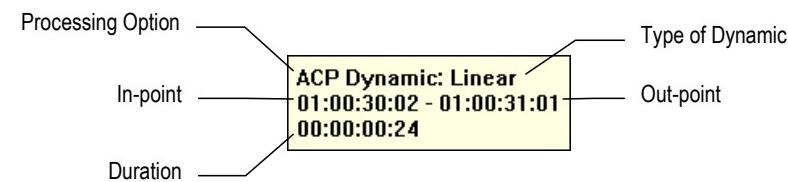
Example of an event that is the start of a dynamic.

Example of an event that is both the start and the end of a dynamic.

Global Adjust
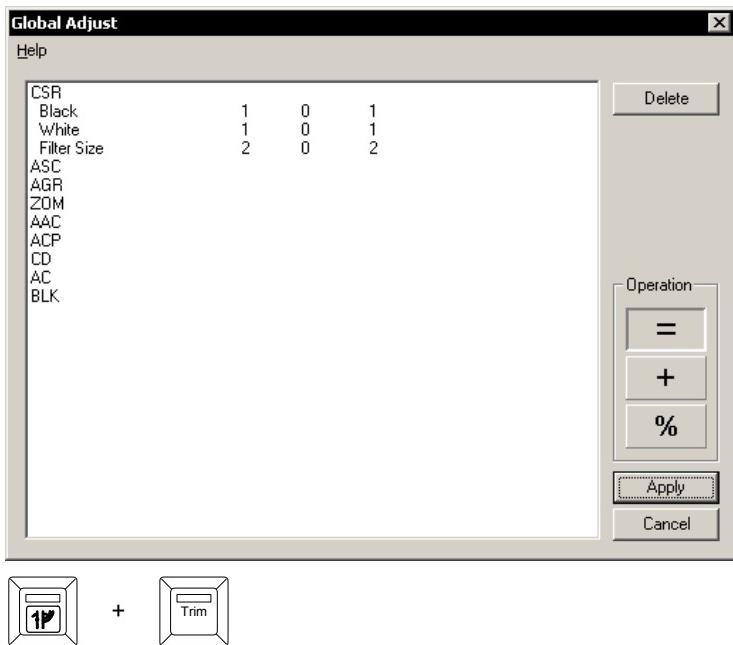
Global Adjust (a.k.a Parameter Trim) is used to apply processing parameter changes (trims) to more than one event.

Trims to the active event are recorded and applied to list selections (event(s) marked in blue) and not the active event.

The types of trim operations that can be applied are:

Set (=)   Replaces the original values in the selected events.

Additive (+)   Adds the same amount of change to the selected events.

Multiplicative (%) Finds the changes in percentage compared to the original values and applies the same changes (in percentage) to selected events.

Operation

1. Press the Valhall key and then the Trim key on the Media panel to open the Global Adjust dialogue

2. Change the processing settings

3. If some parameters should be excluded from the trim, select them one at the time and click on the delete button in the dialogue

4. Select additive (+), multiplicative (%) or set (=), either directly from the GUI or by repeatedly pressing Valhall + Trim.

5. Select the events in the list to be trimmed and remember to include the active event

6. Press the Apply button in the GUI or the Enter key on the Image panel to close the dialogue and apply trims. Otherwise press the Cancel button in the dialogue or press the Valhall key on the Image panel and then press and hold the Trim key.

Note! Currently this procedure requires all changes to be done while the Global Adjust dialogue is open. If changes already have been entered, use the following approach:

1. Ensure all changes has been entered into the event by pressing the Enter key on the Media panel
2. Press the Undo key until settings have returned to their original state for the active event and then press the Recall key
3. Press the Valhall + Trim key on the Media panel to open the Global Adjust dialogue
4. Press the Redo key until all trim settings have been applied and then press the Recall key
5. If some parameters should be excluded from the trim, select them one at the time and click on the delete button in the dialogue
6. Select additive (+), multiplicative (%) or set (=), either directly from the GUI or by repeatedly pressing Valhall + Trim.
7. Select the events in the list to be trimmed and remember to include the active event
8. Press the Apply button in the GUI or the Enter key on the Image panel to close the dialogue and apply trims. Otherwise press the Cancel button in the dialogue or press the Valhall key on the Image panel and then press and hold the Trim key.

Timecode Trim

If one or more events are not correctly aligned to e.g. cuts, a trim of the event timecode can be done.
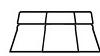
First select the event(s) to be trimmed, enter the trim offset (+/-) in hh:mm:ss:ff from the Media panel and then press the Trim key on the Image panel.

To trim the active or the selected event(s) in steps of 1 frame from the GUI, select "Trim +1 Frame" or "Trim –1 Frame" from the Edit menu in the Event List or use the "+" or "– " key on the numerical keypad.

Trimming to machine position
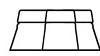
To trim/move the active event to the machine position (current timecode), just press the Trim key on the Media panel.

Absolute Trim
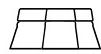
To trim/move the active event to a new timecode, enter the new timecode in hh:mm:ss:ff from the Media panel and then press the Trim key on the Image panel.

| h | h | m | m | s | s | f | f | + | Trim |
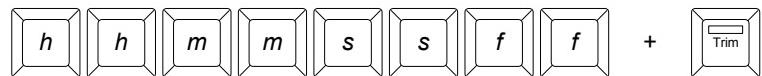
Absolute Trim with Selections
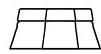
To trim the whole list or parts of the list using the active event as the reference, first select the events to be trimmed, enter the timecode and press the Trim key.

E.g. event number 3 is supposed to be on timecode 00:02:00:00 and all events trimmed accordingly: Position the cursor (active event) at event no. 3 which now becomes the active event. In this case press All + Select to select all events. Enter timecode 00:02:00:00 on the Media panel and then press the Trim key.

Undo
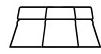
List operations can be undone if you make a mistake. Up to 5000 levels of undo is available.

To undo the last list operation, press the Undo key on the Image panel.

Undo

To redo the last operation, press the Redo key.

Redo

To undo the last list operation, select Undo from the Edit menu of the Event list window or type Ctrl+Z from the keyboard while the Event list or Timeline is in focus.

Alternatively click on the Undo button in the List Control bar.

Undo

To redo the last operation, select Edit > Redo or type Ctrl+Y from the keyboard.

Alternatively click on the Redo button in the List Control bar.

Redo

History window

The History window allows you to jump to any recent state of the list (within the limit of undo levels) during the session.

The latest list operation is found at the top of the window. Click on an event in the history window to undo all entries done after this (events above in the list).
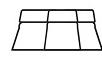
To open the History window from the Image panel, press Valhall+Undo.

To close, keep Valhall+Undo pressed.
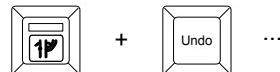
To open the History window from the GUI, select menu File > View History from the Event list window.

Note! When a list is closed, the history is lost.

Working with individual Processing Lists

Single

If you want to work e.g. with just colour grading and deal with the rest of the processing at a later point you can use the Single function. This inhibits the programming of everything but the selected processing option.
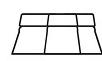
First select the processing option from the menu selection on the Image panel and the press the Single key.

Right-click on the option in the list and select Single from the pop-up menu.
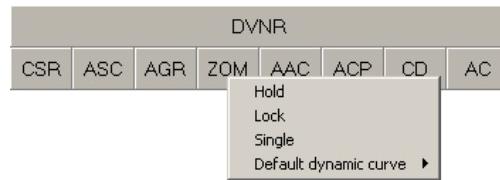
Note! As soon as any option is locked or unlocked using the Lock function as described below, the Single function is disabled.

Lock
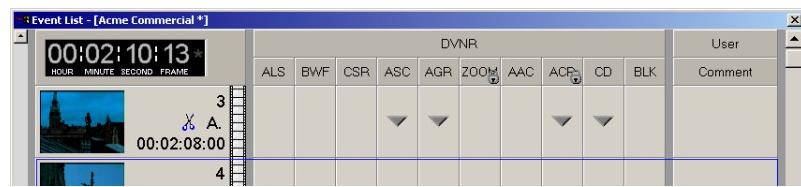
One or several processing lists can be locked to prevent accidental programming.
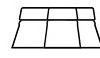
First select the processing option from the menu selection on the Image panel and the press the Lock key. To lock all, press All+Lock.

Right-click on the option in the list and select lock from the pop-up menu. To lock all, right-click in the DVNR bar and select the command from the pop-up menu.

All Unlock
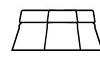
To unlock all, first press the All key on the Image panel and then press and hold the Lock key.

To lock or unlock all, right-click in the DVNR bar and select the command from the pop-up menu.

Note! When using the Recall key from the Image panel, only settings not locked will be recalled. To recall all settings, use All+Recall.

Hold
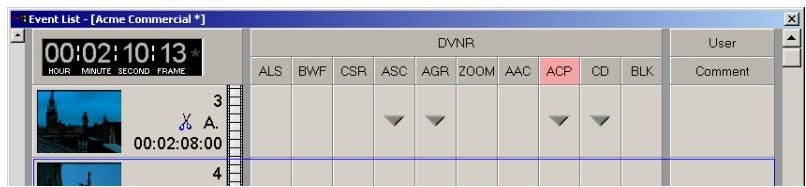
When enabled, parameter settings for the selected processing option are not updated by the list. It's a sort of a bypass of the list. Also note that it is not possible to program parameters when Hold is enabled.
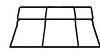
First select the processing option from the menu selection on the Image panel and then press the Hold key.

Right-click on the option in the list and select Hold from the pop-up menu.

All Hold
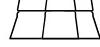
Press All+Hold on the Image panel to hold all options.
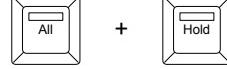
All Unhold
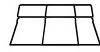
To unhold all options, first press the All key on the Image panel and then press and hold the Hold key.

Hiding Lists

Option lists, if it is not being used during a session, can be hidden to improve on readability and reduce the size of the list dialogues independently for the Event List and the Timeline. Right click in the DVNR field of the list to access this control.
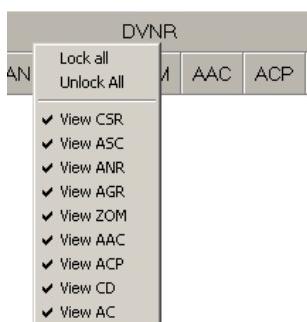
Bypass List
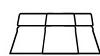
Programmable on one of the function keys, this control "bypasses" the whole list and does not affect any Hold as described above when disabled.

Importing/Exporting EDL

EDL Import
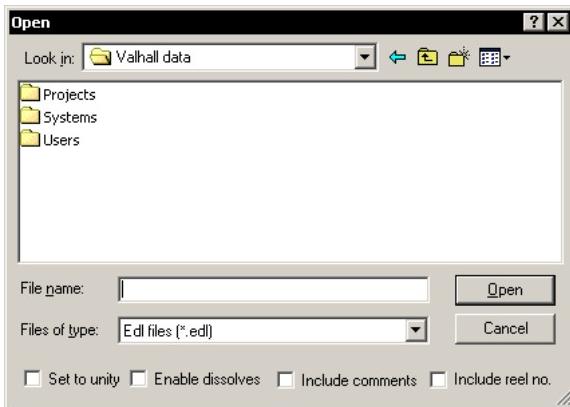
Imports an EDL-list from floppy or hard disk where the in-points on the recorder are used to create the Processing Decision List (PDL) events.

Go to the File menu in the Event List and select EDL import…

The EDL import dialogue offers some options:

Set to unity automatically sets all events to the defined unity (read more on page 113)

Enable Dissolves translate EDL dissolves to Valhall list dynamics.

Include comments finds comments in the EDL and puts them in the proper comments field of the Event list.

Include reel no. finds the reel numbers in the EDL and puts them in the proper comments field of the Event list.

The EDL import handles different Sony and CMX formats. For availability of other formats, please contact your distributor.

EDL Export
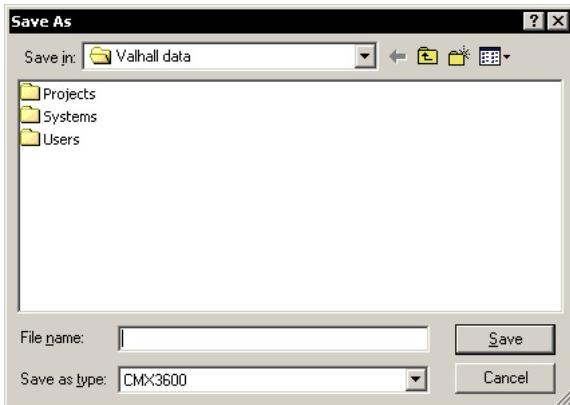
Exports an EDL list with in- and out-points according to the PDL list. Once the filename of the EDL list is determined, an EDL Export dialogue appears.

The EDL Export dialogue allows a number of different EDL formats (CMX3600, CMX3400A, CMX3400, CMX340, Grass Valley) to be selected.

Note! Since the Valhall list does not have out-points, the last out-point in the EDL is by default set to 1 minute after the in-point.

Saving Lists

Save

Lists can be saved in different ways:

- Go to the List tab in the Project Manager and choose Save or Save as

- From the Image panel, press and hold the Save key

 …

Quicksave

When a "normal" save is performed, the thumbnails are defragmented to maintain performance of the list operation.

A quicksave will not defragment the thumbnails but will on the other hand be a lot quicker.

To perform a quicksave, quickly press the Save key on the Image panel.

Autosave

In addition an Autosave function is available that will save the current list in the background while working. Autosave can be enabled under the List page in the User Profile dialogue (see page 81).

Note! If Autosave was enabled when an abnormal shutdown occurred, restart the Valhall application and login in as the same user. Valhall will ask if the autosaved version of the list should be used instead of the latest manually saved. If so, go the top menu List and select Save as… after the list has been loaded.

The recovered list will be deleted if not used when prompted and then saved.

A recovered list has a name beginning with a dollar sign ($) and is visible in Windows explorer but not in the List Browser.

Saving a Copy of the List

To save a copy of the list go to menu List > Save a Copy…

Merging Lists

Valhall allows merging of lists where the final list will contain all events from both original lists. Events will be re-numbered.

Go to menu List > Merge to list… and pick the list to merge to the current one. After the operation is completed go to menu List > Save as… and store the new list in another name.

Note! Settings stored in the second list will override the settings in the first list.

Only thumbnails from the first list are kept.

Using a Playlist

A playlist is used to create a continuous sequence of images, typically after transferring a number of reels to a DDR including leading count-down sequences or test signals.

The playlist is similar to an EDL, describing how the pictures should be played out from the DDR.

The playlist definition will not affect the material on the source machine other than how it is played back.

A playlist defined in Valhall will have a continuous timecode without any holes including definable start timecode.
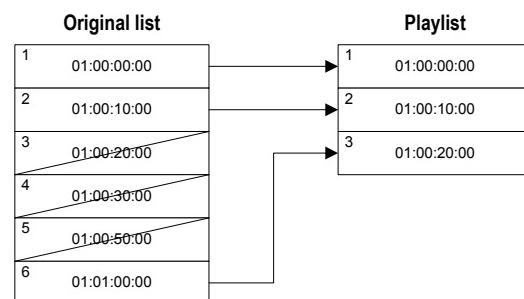
Currently supported servers are models from DVS.

For information on specific models, please contact Digital Video Systems, http//www.dvs.de/.

Setting up the DVS DDR

To setup the DVS DDR for playlist operation, perform the following actions:

1. Create a new VTR configuration. The name of the VTR configuration must contain the IP address or computer name within square brackets [ ]. E.g. example: DVS [192.168.80.110] or DVS [computer name].

2. Select DVS-VTR in the VTR configuration dialogue, General > Type.

Defining the Playlist

To define a playlist, perform the following steps:

1. First select the events to be included or excluded from the playlist, whichever is most convenient.

2. In the Event List, select menu item Edit > Create Playlist.

3. The Create Playlist dialogue, which will pop up, suggests the original timecode of the first event in the playlist, but this timecode can be changed.

4. Choose Include or Exclude selected events from playlist depending on the chosen approach.

5. By clicking on OK, the Create Playlist dialogue will disappear, events not to be part of the playlist will be omitted and the list will be rippled.

Note! To be able to define a playlist, a DVS server must be the player in the current system configuration and physically connected.

Restoring the List

To revert to the original list, select menu item Edit > Restore Playlist.

⚠️ **Note!** Consecutive events that was omitted when creating the playlist will be replaced by a single event when reverting to the original list.

Original list			Playlist			Restored list	
1	01:00:00:00		1	01:00:00:00		1	01:00:00:00
2	01:00:10:00		2	01:00:10:00		2	01:00:10:00
3	01:00:20:00		3	01:00:20:00		3	01:00:20:00
4	01:00:30:00						
5	01:00:50:00						
6	01:01:00:00					4	01:01:00:00
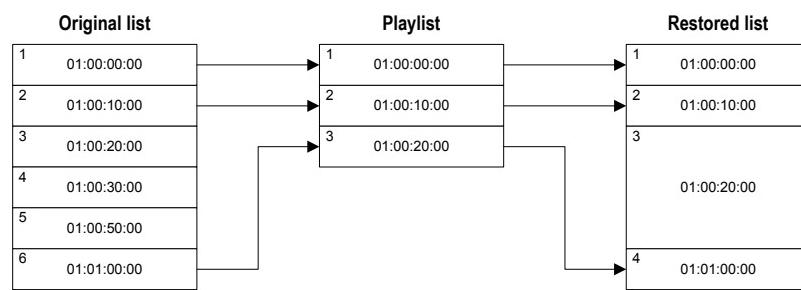
Restored list

7. Bookmarks

General

Bookmarks are used to mark parts in the material on the fly for later attention.

Typically a bookmark could indicate a large piece of dirt needing special attention after a colour grading pass.

Bookmarks are indicated in the Timeline (Valhall Premium only).

In addition, the Bookmarks window presents all the bookmarks in a list together with corresponding timecodes. To identify certain bookmarks, comments can be added.
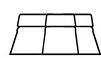
The Bookmarks window is opened by pressing Valhall+Bookmark keys on the Image panel.

First press the Valhall key, then press and hold Bookmark to close.

A complete list of available panel commands for bookmark operation can be found in the "Bookmark Command Reference", page 223.

Operation

Inserting Bookmarks
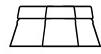
Quickly press the Bookmark key on the Image panel to insert a new bookmark.

Press the <Insert> key on the keyboard, Right-click in the Bookmarks window and select Insert from the pop-up menu or alternatively select menu Edit > Insert.

Alternatively click on the Bookm key in the List Control bar.

Accurate Bookmarks

Bookmarks can only be considered accurate if the source machine is in still or stop mode. If accurate, the Bookmark in the Timeline will be green. If not, the Bookmark will be yellow and a "tilde" (~) will precede the timecode in the Bookmark window.

Correcting a Timecode

First click in the timecode field of the selected bookmark and then enter the new timecode or use the up and down arrows to trim it.

Read more on how to use the timecode edit box on page 9.

Adding a Comment

Either press <f2> on the keyboard or click in the comments field of the selected bookmark. Enter the text and press the return key.

Browsing Bookmarks

To go to a specific bookmark, enter the associated number followed by the Bookmark key.
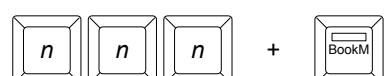
To go to next or previous bookmark, press "+" or "-" followed by the Bookmark key. To e.g. go three bookmarks forward, enter "+3" followed by the Bookmark key.

To go to a specific bookmark, double-click on the bookmark.

To go to next or previous bookmark, select Prev or Next from the Edit menu of the Bookmark window.

Cue to Selected Bookmark

First ensure that Bookmark mode is selected, then press the Recall key on the Image panel or the Cue key on the Media panel to cue up the source machine to selected bookmark.

Recall or Cue
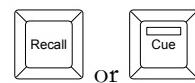
Press <Ctrl>+Q on the keyboard

Deleting Bookmarks

Ensure the Bookmark key is selected, and then either position the list cursor at the specific event with the up/down keys or enter the bookmark number from the numerical keypad and then press the Delete key on the Image panel.

Delete

First select the bookmark to delete and then press the <Delete> key on the keyboard, select Delete from the Edit menu or right-click on the bookmark and select Delete from the pop-up menu.

Deleting All Bookmarks

Ensure the Bookmark key is selected, then press the All key followed by the Delete key on the Image panel.

All + Delete

Select Delete all from the Edit menu.

Note! A prompt will ask you to confirm the Delete All operation.

Valhall

Are you sure you want to delete all bookmarks?

Yes   No
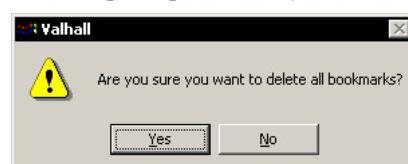
Printing Bookmarks

To print the a list of the bookmarks including comments, go to the Event list window and select menu File > Print > Bookmarks…

8.   Notes

General
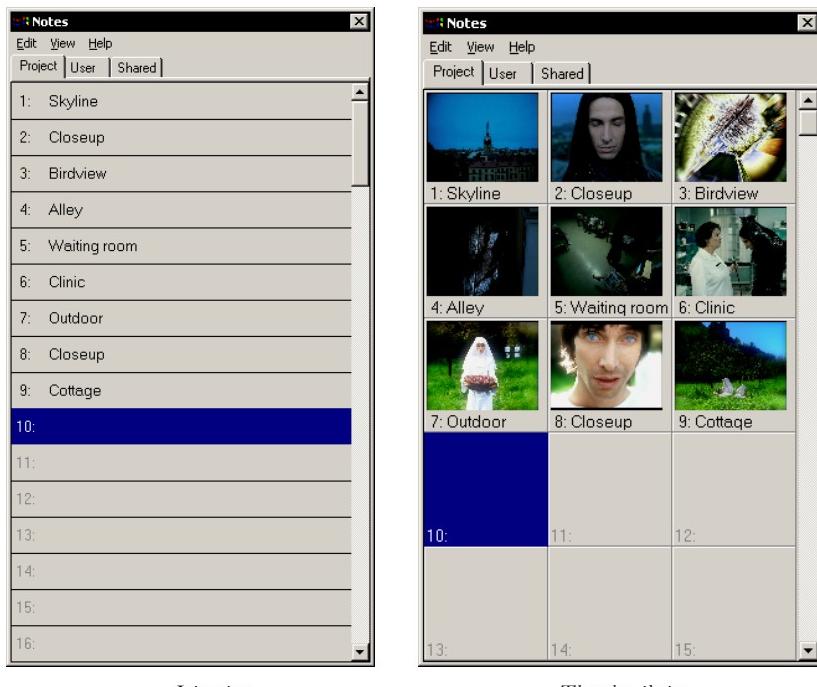
| List view | Thumbnail view |

Notes are used for temporary storage of processing parameters, similar to Presets.

Valhall provides three sets of 100 notes each:

- Project – Notes stored on a project basis
- Personal – Notes available upon login
- Shared – Notes accessible by every user, but only writable with special permission (System Setup access enabled)

Valhall Premium also provides a thumbnail view of the notes, which makes it easier to remember notes without the need for a comment.

List or thumbnail view can be selected in the view menu.

A complete list of available panel commands for note operation can be found in the "Note Command Reference", page 224.

Operation
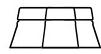
First press the Valhall key followed by the Note key, use the wipe wheel or up/down arrows to position the cursor. Press Enter to store a note, Recall to recall a note and Delete to delete a note.

Right-click on a note and a pop-up menu will appear, from which enter, recall or deletion of the selected note can be done.

Note! Options parameters locked in the list are normally not recalled from a Note. When in Notes mode, Press All + Recall on the Image panel to recall all option parameters independently of options locked in the list.

Switching Sets of Notes
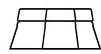
To switch between the different sets of notes, press Shift+Note on the Image panel.

Tip! Access to Project Notes 1-6, 95-100 is available for the programmable function keys. These are found in the Notes group.

Notes by Number
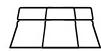
Without using the Notes window
Enter the notes number from the numerical keypad on the Media panel, press and hold the Note key on the Image panel to store, press shortly to recall.
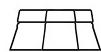
Using the Notes window
First ensure the Note key is active, enter the notes number from the numerical keypad on the Media panel, then press Enter to store a note, Recall to recall a note or Delete to delete a note.

To perform an operation on e.g. the next note, press + or +1 followed by the operation.

Cue to Position in List

To cue the source machine to the note's original position in the list, ensure the note is selected and the press the Cue key on the Media panel.

Rightclick on the note and select Cue or press <Ctrl+Q> on the keyboard.

Adding a Comment

Ensure Note key is selected, with up/down arrows or wipe wheel, go to the note, press <f2> on the keyboard, enter text and press return.

Click at the bottom field of the note (in thumbnail view) or in the right field of the note (in text view), wait for cursor, enter text and press return.

Write Protection

To prevent accidental erase of specific notes, right-click on the note in the GUI and choose write-protection.

Deleting All Notes

While Note mode is enabled, press the All key followed by the Delete key on the Image panel.

All + Delete

Select menu Edit > Delete all in the notes window.

Note! As all other operations, Delete All will be applied to the visible set of notes. In addition, a prompt will ask you to confirm this operation.

Valhall

Are you sure you want to remove all notes?

Yes   No
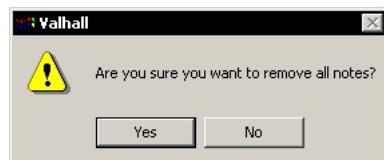
Thumbnails

Size

The size of the note thumbnails can be set in the menu View > Thumbnail Size of the Notes window.

Aspect

When a new note is entered, the thumbnail is given the aspect/source setting as determined by the Media tab in the DVNR setup. To change aspect/source for a particular thumbnail, right-click and select Thumbnail > source or aspect.

Quick-Notes

Quick-Notes are similar to the regular Notes, the difference being that they only can be accessed when programmed on function keys and that they store and recall the settings for the currently selected processing option.

Quick-Notes are only stored on a project basis.

Tip! If you want to have Quick-notes on the Colour panel that do not change as other Quick-notes depending on the selected option, there are dedicated Colour Correction Quick-notes for this purpose. These programmable functions are found in the DVNR ACP group and are called Mem 1-6.

9. Still Store

General

The optional integrated Still store is used to compare reference images (stills) with the live video, mainly when colour grading.

Stills are tied to projects and any amount of stills, depending on the size of the drive, can be stored within each.

A still is stored with the full resolution picture, a thumbnail, the timecode of the original position in the list, processing parameters and an optional comment.

A complete list of available panel commands for still store operation can be found in the "Still Store Command Reference", page 225.

Operation
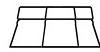
First press the Valhall key followed Still key, use the up/down arrows to position the cursor. Press Enter to store a still, Recall to recall a still and Delete to delete a still.

Right-click on a free still and a pop-up menu will appear, from which enter, recall or deletion of the selected still can be done.

Tip! Grab Next is a programmable function in the Still Store group that can be programmed on one of the function keys. Grab Next takes a still and places it in the first free position of the Still window.

Stills by Number
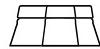
Without using the Still store window
Enter the Still number from the numerical keypad on the Media panel, press and hold the Still key on the Image panel to store, press shortly to recall.
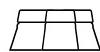
Using the Still store window
First ensure the Still key is active, enter the still number from the numerical keypad on the Media panel, then press Enter to store a still, Recall to recall a still or Delete to delete a still.

To perform an operation on e.g. the next still position, press + or +1 followed by the operation.

Comparing

To compare the still and the live video, alternate between the Still and the List key.

Tip! Compare is a programmable function in the Still Store group that can be programmed on one of the function keys. The Compare function toggles between the previously recalled still and the live video.

Tip! Stills can be stored in a temporary memory instead of being stored on hard disk. This memory can be accessed by using the programmable functions Grab to mem and Load from mem.

Wiping

Wipe Wheel

H/V Wipe ——————→ ⬭   ⬭ ←—————— Flip Wipe
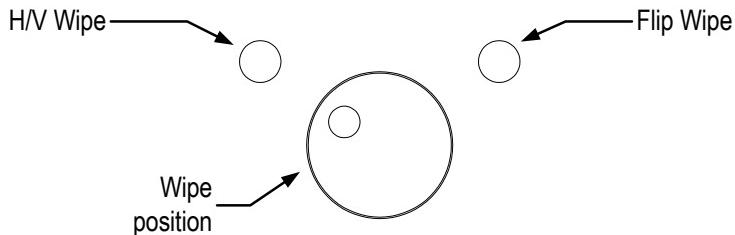
Wipe
position ——————→ ◯

Wipe wheel on Image panel

Use the wipe wheel on the Image panel to wipe between the still and the live video. Press the left wipe key to toggle H/V wipe. Press the right wipe key to flip the wipe.

Control Bar

As an alternative to the wipe wheel on the Image panel, there is a control bar available.

Wipe position ——————┐
H/V Wipe ——————→ [◄►] [█░░░░░░░░░] [L|S] ←—————— Flip Wipe

Still Control Bar

Use slider in the Still Control bar (menu View > Still Control) to wipe between the still and the live video. Click the left button to toggle H/V wipe. Click the right button to flip the wipe.

Tip! Wipe Wheel acceleration can be set on the Still Store tab in the User Profile.

Tip! Wipes can be centred by using a programmable function called Wipe Center.

Positioning

To position the image from the still store, use the Valhall key in combination with the wipe wheel for horizontal positioning or the Shift key in combination with the wipe wheel for vertical positioning.

Alternatively, press the Trim key on the Image panel and use the trackball to position the still.

Storing Origin

If the picture origin is not correct, adjust the picture position according to instructions above and then select menu Edit > Store origin.

Cue to Position in List
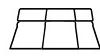
To cue the source machine to the still's original position in the list, ensure the still is selected and the press the Cue key on the Media panel.

Rightclick on the still and select Cue or press <Ctrl+Q> on the keyboard.

Adding a Comment
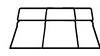
Ensure Still key is selected, with up/down arrows, go to the still, press <f2> on the keyboard, enter text and press return.

Click at the bottom field of the still, wait for cursor, enter text and press return.

Write Protection

To prevent accidental erase of specific stills, right-click on the still in the GUI and choose write-protection.

Deleting All Stills
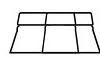
While Still mode is enabled, press the All key followed by the Delete key on the Image panel.

Select menu Edit > Delete all in the notes window.

Note! A prompt will ask you to confirm the Delete All operation.
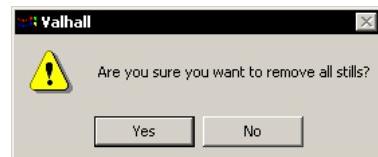
Thumbnails

Size

The size of the still thumbnails can be set in the menu View > Thumbnail Size of the Still window.

Aspect

When a new still is entered, the thumbnail is given the aspect/source setting as determined by the Media tab in the DVNR setup. To change aspect/source for a particular thumbnail, right-click and select Thumbnail > source or aspect.

Exporting to other Picture Formats

Stills can be exported to JPEG, TIFF, BMF, GIF and PNG picture formats.

Right-click on the still to export and select Export… from the pop-up menu.

Importing from other Picture Formats

Stills can be imported from JPEG, TIFF, BMF, GIF and PNG picture formats. Imported stills can be of any size and will be automatically be centred.

Right-click on the still to import and select Import… from the pop-up menu. This operation will keep the original timecode of the first still (if available).

Alternatively select menu File > Import to place the image at the first available free position. Multiple images can be selected.

Using Overlays

A still can be recalled as and placed on top of the live picture as an overlay or a "Picture within a Picture".
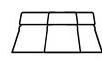
To recall a still as an overlay, press Valhall followed by Recall on the Image panel.

Right-click and on the still and select Overlay recall from the pop-up menu.

Positioning an Overlay
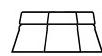
To position a still recalled as an overlay, first press the Trim key on the Image panel and then position the overlay using the trackball.

To restore the position, press and hold the Trim key.

Use the controls on the Still store page of the User Profile.

Sizing an Overlay

To size an overlay, use the wipe wheel on the Image panel.

Use the controls on the Still store page of the User Profile.

Tip! Optional de-interlacing of stills can be performed automatically. This is set up in the Still store page of the User Profile

10. Editing

General

Valhall supports up to four machine VTR/Disk based linear editing using P2 (Sony) control.

Getting started

First, make sure that both machines are set to Remote control and properly connected to the Valhall-Syncro using standard RS422 cables.

The Player (VTR1) should be connected to RS422 connector 2 of the Syncro and the Recorder (VTR2) to RS422 connector 3.

Note! The machines must support the Auto Edit function as found in the Sony VTR Protocol.

Opening the Edit dialogue

For better control of the Edit operations open the Event dialogue.

Press the Edit button on the Valhall toolbar or press the Valhall key followed by the Edit key on the Media panel to open the Edit dialogue.

Press the Valhall key followed by the Edit key on the Media panel.
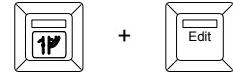
Press the Edit button on the Valhall toolbar.

Pre-striping a tape

Set up the Recorder with a tape, and the correct machine settings; TC Internal gen. TC Preset source etc.

Starting a Crash Recording

Press on Rec to begin a crash recording with timecode generated from 00:00:00:00. For a different start timecode, set any valid timecode as "IN" for the device and then press on Rec on the Media panel.

...
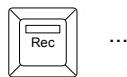
Ganging

Occasionally the starting point of the recorder may not be the same as on the player. In this case, a relationship has to be set up between the machines.

Select VTR 1 (typically) and enter the reference point of the player, press the Valhall key followed by the In key. Select VTR 2 (typically) and enter the reference point of the recorder, press the Valhall key followed by the In key.

Either manually enter the reference timecode in the Ref boxes of the Edit dialogue, or press the Ref button, when the VTR is located at the reference point.

Read more on how to use the timecode edit box on page 9.

Ganging information is stored and recalled in the project.

Editing

Selecting the Edit Mode

Two editing modes are supported: **Assemble** mode and **Insert** mode.

Assemble Mode

New scenes are added to the end of existing recorded scenes. Video, audio channels and time codes are recorded at the same time.

Press and hold the Asmbl key on the Media panel to toggle between Assemble and Insert mode.

...
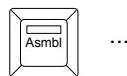
Click in the Assemble check box to in the Edit dialogue to edit in Assemble mode.

Note! In Assemble mode, recording continues for a certain distance beyond the edit out point, in order to record control information for the next segment. This means that pre-recorded information beyond the edit Out point will be erased. Please use the Insert mode if you wish to insert material onto a pre-recorded tape.

Insert Mode

A segment of new material is inserted onto the tape between two predetermined points. Video, audio channels and time code can be recorded separately or at the same time.

Select one or more of the Insert boxes – Video, A1 (Audio channel 1), A2 (Audio channel 2), TC (Timecode) – to select the input signals.

Note! In insert mode editing the recording tape must contain uninterrupted control information.

Selecting Edit mode Using the Media Panel Menu
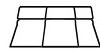
The Media panel provides a more extensive way of selecting Edit modes:

1. Press the upper leftmost key to enable the main menu

```
   ●      ○      ○

 ▼
 VTR1  00:01:25:02
 VTR2  00:25:25:02
 VTR3  01:00:07:11
 VTR4  01:00:07:12

   ○      ○      ○
```
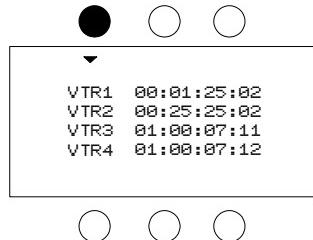
2. Press the Edit key to enter Edit mode

```
   ○      ●      ○

 ▲     Edit   Cue
 VTR1  00:01:25:02
 VTR2  00:25:25:02
 VTR3  01:00:07:11
 VTR4  01:00:07:12

   ○      ○      ○
```
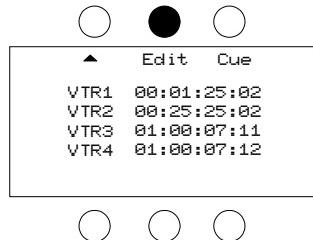
3. Select Edit mode (Video/Audio/TC are the Insert modes)

```
   ○      ○      ○

 ▲            Asmbl
 REF   00:00:00:00
 IN    --:--:--:--
 OUT   --:--:--:--
 DUR   --:--:--:--

 Video  Audio   TC

   ○      ○      ○
```
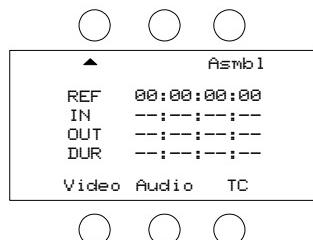
Edits based on List selections.

Quick editing can be performed based on list selections. The last event cannot be selected since Valhall considers this an open event.

For better control of the operations open the Event dialogue by clicking the Edit button on the Valhall Toolbar or pressing Valhall+Edit on the Media panel.

Make sure that the VTRs you want to use in the edit have correct Ref points set (can be found in the Edit dialogue). Two mirrored timecoded tapes should have their corresponding Ref set to 00:00:00:00.

Performing the Edit

Press and hold Edit. The selected events will now be imported and edited.

...

Intelligent Editing

The Edit mechanism automatically minimizes the total time needed for a number of consecutive edits.

If the time in between two edits is short, the Intelligent Editing will switch off the recording between the two events and switch on at the in-point of next event.

If the time between two edits is long, the machine will cue up to next event and perform a preroll.

Setting Manual Edit Points

1. Select the Player from the Media panel by pressing the 'VTR 1' key.

2. To set the In point, either a) using the search dial, place the tape at the in point of the source material and press the 'In' key
   or b) type in the timecode from the numerical keypad and press the 'In' key.

3. To set the Out point, either a) using the search dial, place the tape at the out point and press the 'Out' key
   or b) type in the timecode from the numerical keypad and press the 'Out' key.

4. Select the Recorder from the Media panel by pressing the 'VTR 2' key.

5. Using the tape transport keys, search dial or manual entry of time code (as in 2.), place the Recorder on the in point.

Note! A recorder without an in-point will not participate in an edit.
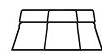
Previewing the Edit

To preview the Edit, press the Preview key on the Media panel.

Select menu Edit > Preview in the Edit dialogue.

Executing the Edit
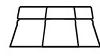
When all of the edit points are set correctly, you can now execute the edit by pressing the Edit button.

[Edit] ...

Go to the Edit menu of the Edit dialogue and select Edit Events (if events have been selected for editing) or Edit Manual.

Note! To prevent accidental changes, DVNR option parameters settings can't be changed manually during an edit.

Aborting the Edit
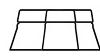
To abort the edit before the Out point is reached, press the Stop key.

Reviewing the Edit
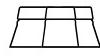
To review the Edit on the recorder(s), press the Review key on the Media panel.

[Review]

Select menu VTR > Review in the VTR recorder dialogue.

Cue all In-point
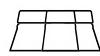
To cue all machines to the respective in-point, press the All key followed by the In key.

[All] **+** [In]

Cue All to Out-point
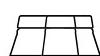
To cue all machines to the respective out-point, press the All key followed by the Out key.

[All] **+** [Out]

Edit Status

Valhall keeps track of edit status for each event. The status is displayed in the information field of the event.

Event transferred
This green icon indicates that the event has been transferred successfully.

Edit failed
This red icon indicates that the edit failed for some reason, the material on the source machine might have been damaged and another transfer is required.

Event modified
This yellow icon indicates that settings has been changed and the event needs to be transferred again at some point.

Transferring Modified Events

Once settings has been modified after the initial transfer, the changed events can be transferred without manual selections as follows:

Selecting the Modified Events
In the Event list dialogue, select menu Edit > Select Modified Events.

Performing the Edit
Press and hold the Edit button.

...
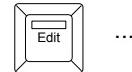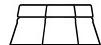
Go to the Edit menu of the Edit dialogue and select Edit Events.

Trimming Edit Delay and Offset.

Edit Delay

1. Open the Edit dialogue
2. Ensure the Reference points are the same on the player and recorder
3. Ensure Rec Inhibit is off on the recorder and that the tape is not write-protected
4. Set the Recorder to "Regen/Internal "and "VITC On " on the VTR
5. Set Insert video on the Recorder in the Edit dialogue
6. Create an event in the list, with a duration of a couple of seconds
7. In the list, select the event to edit
8. Click on the Test Button on the Valhall Toolbar, select a recognisable pattern different from the one found on the tape
9. Select menu File > Edit in the Edit dialogue
10. After editing, verify the actual in- and out-points of the edit on the recorder
11. Trim the Edit delay in the VTR configuration for the recorder (positive if the edit is late and negative if early) and repeat steps 8 to 10 until the edit performs correctly

Offset

1. Open the Edit dialogue
2. Ensure the edit delay as described above is correct for the recorder
3. Ensure the Reference points are the same on the player and recorder
4. Ensure Rec Inhibit is off on the recorder and that the tape is not write-protected
5. Set the Recorder to "Regen/Internal "and "VITC On " on the VTR
6. Set Insert video on the Recorder in the Edit dialogue
7. Enable ganging
8. Set in-point for the player one frame ahead of a scene change
9. Set duration of the edit to approx 1 second
10. Select menu File > Edit in the Edit dialogue
11. After editing, verify that the scene change is one frame after the actual in-point on the recorder
12. Trim the Offset in the VTR configuration for the recorder (positive if the scene change is inserted late and negative if early) and repeat steps 10 and 11 until the edit performs correctly

11. User Management

General

Administrator

The Administrator can add new users and grant access to e.g. user management and system setup.

At delivery, no password is set for the Administrator.

Access rights are not inherited.

Administration

Adding new Users
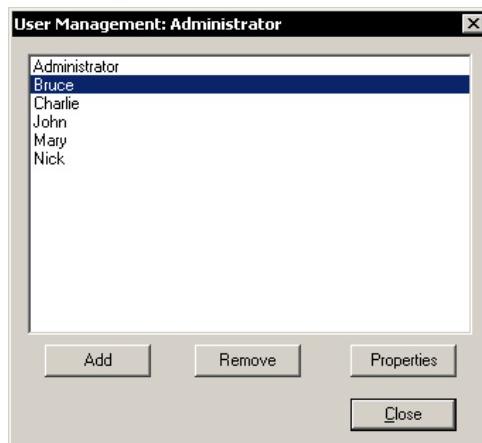
Go to menu User > Management

Click on the Add button and then enter the new user name and select the user, which the new should be based on (inherits the User Profile settings) in the dialogue that pops up.

Note that access rights are not inherited. If you want to change these settings, select the user and click on the Properties button or just double-click on the user name.

The following access rights are available:

System Setup	Configurations
	Shared notes
	System upgrade
User Management	User Management
Project Management	Project Management (Access via the Project Manager to all users projects/lists for copying, moving, renaming or deleting)

Tip! Add a user (e.g. "default user") as a template on which all new users can be based.

.

12. User Profile

Overview

In the User Profile window you can personalise the operation of control panels and more. To open this window, click on the User Profile button at the top of the workspace or select menu User > Profile.

Settings are automatically stored upon logout.

General
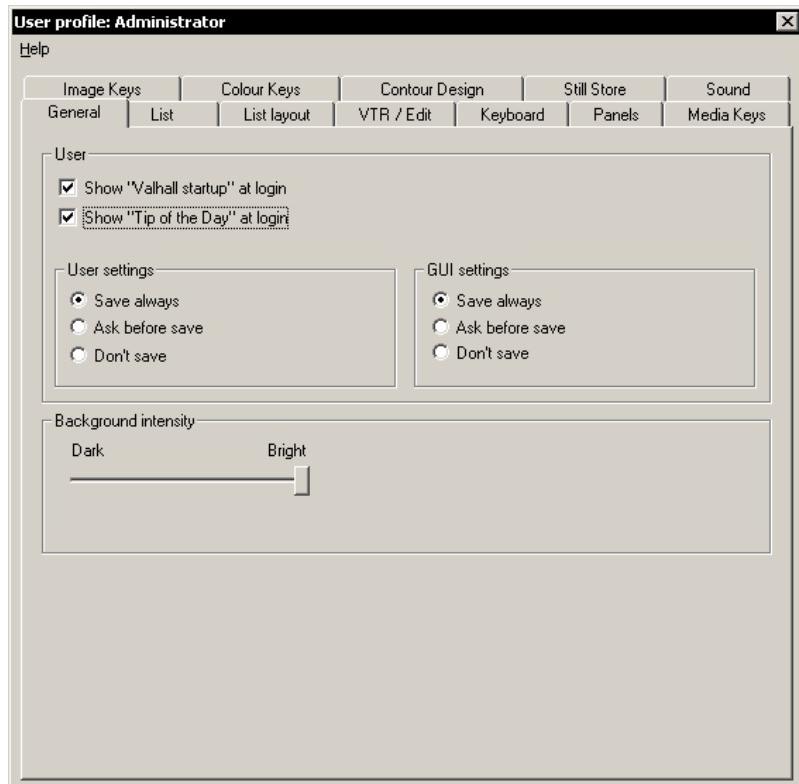
Show "Valhall startup" at login
Determines whether the Valhall startup dialogue should be shown after login or not.

The Valhall startup dialogue gives the operator the choice of directly open the recent project/list or create a new project.
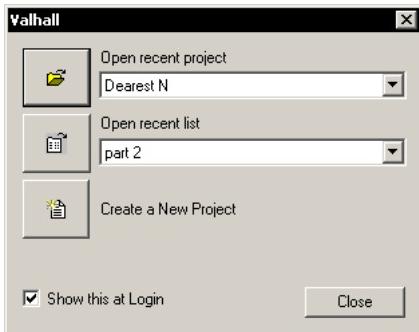
Valhall startup dialogue

Show "Tip of the Day" at login
Determines whether the Tip of the Day dialogue should be shown after login or not.

Tip of the Day provides the operator with useful hints on the Valhall operation.

The dialogue can also be opened from top menu Help > Tip of the Day…
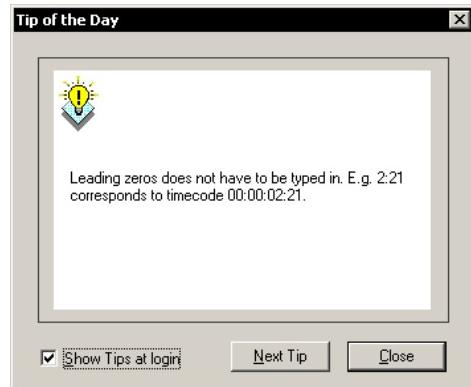
Tip of the Day dialogue

User Settings
Determines how User settings should be saved when logging out; always, never or prompted.

GUI Settings
Determines how GUI settings should be saved when logging out; always, never or prompted.

Tip! You can always load or save the GUI from top menu User > GUI.

Background intensity
Sets the intensity of the background to match the selected Windows colour scheme.

List
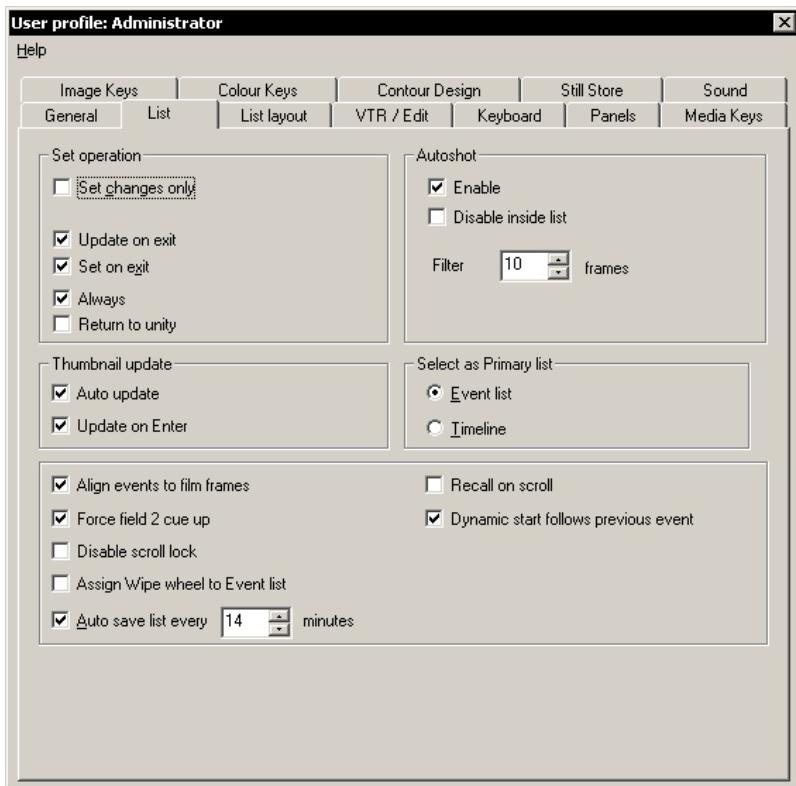
The List section determines the operation of the list.

Set operation

Set changes only
Normally all settings are programmed at each event. By enabling "Set changes only", only the settings that have been changed will be programmed.

Update on exit
"Update on exit" updates previously programmed (set) events as soon as the source machine passes an event boundary.

Set on exit
Using "Set on exit" there is no need to enter settings manually for the events. As soon as the source machine passes an event boundary the current settings are automatically stored in the previous event.

Always
Normally, "Set on exit" only sets an event if there is a change. By enabling "Always", settings will be stored whether they have been changed or not.

Note! This function is not available if "Set changes only" has been chosen.

Return to Unity
When enabling "Return to Unity" in combination with "Set on exit", the next empty event will get unity settings when entered.

Autoshot

Enable
Autoshot automatically registers cuts/scene changes as the source machine is in playspeed.

Autoshot On/Off can be programmed on one of the programmable function keys. Alternatively Autoshot can be toggle pressing Vahall+Byp All on the Image panel.

Disable inside list
When enabled, autoshot automatically turns off in order not to create any unwanted events when the tape is played back before the last event.

Filter
To prevent false autoshots filling up the list you can set the minimum interval that has to pass after an autoshot has created an event, before it creates the next one.

Thumbnail update

Auto update
When Auto update is enabled and the source machine enters an event in playspeed, its thumbnail will automatically be updated.

Update on enter
When enabled, thumbnails are updated when the Enter key is pressed to store new settings, if the source machine is at the active event.

Tip! Press and hold the Enter key on the Image panel to update a thumbnail manually

Select as Primary List

Valhall Premium+ only.

The List key on the Image panel is used to open the primary list window (the list which you use the most) while Valhall+List is used to open the secondary window.

Misc.

Align events to film frames
When enabled, manually entered events are automatically aligned to film frames.

Force field 2 cue up
This control should be enabled for machines that are not capable of cue up to field 2.

Disable scroll lock
Normally the event list and the timeline are locked together, when scrolling from the wipe wheel or the up and down keys on the Image

panel. By checking this control, the wipe wheel only scrolls the timeline and the arrow keys only scroll the event list.

Assign Wipe wheel to event list

When in List mode, the wipe wheel is normally used to browse in the time line. This causes the event list to advance irregularly. By enabling the "Assign Wipe wheel to event list" the wipe wheel browses event by event rather than in time.

Autosave

The Autosave feature automatically makes a copy of the list in the background in case the Valhall program is shut down abnormally.

Note! If Autosave was enabled when an abnormal shutdown occurred, Restart the Valhall application and login in as the same user. Valhall will ask if the autosaved version of the list should be used instead of the latest manually saved. If so, go the top menu List and select Save as… after the list has been loaded.

The recovered list will be deleted if not used when prompted and then saved.

A recovered list has a name beginning with a dollar sign ($) and is visible in Windows explorer but not in the List Browser.

Recall on scroll

The normal function of the arrow keys on the Image panel is to scroll the event list (moving the list cursor). If the Valhall key is kept pressed while scrolling, parameters are also being recalled.

By enabling Recall on scroll, these functions are swapped. When using the arrow keys only, list cursor is moved and the parameters are recalled. If the Valhall key is kept pressed, the parameters are not being recalled while scrolling.

Dynamic start follows previous event

If this control is enabled, the settings of the dynamic start will always be the same as the previous event unless the settings for the dynamic start is set differently.

List Layout
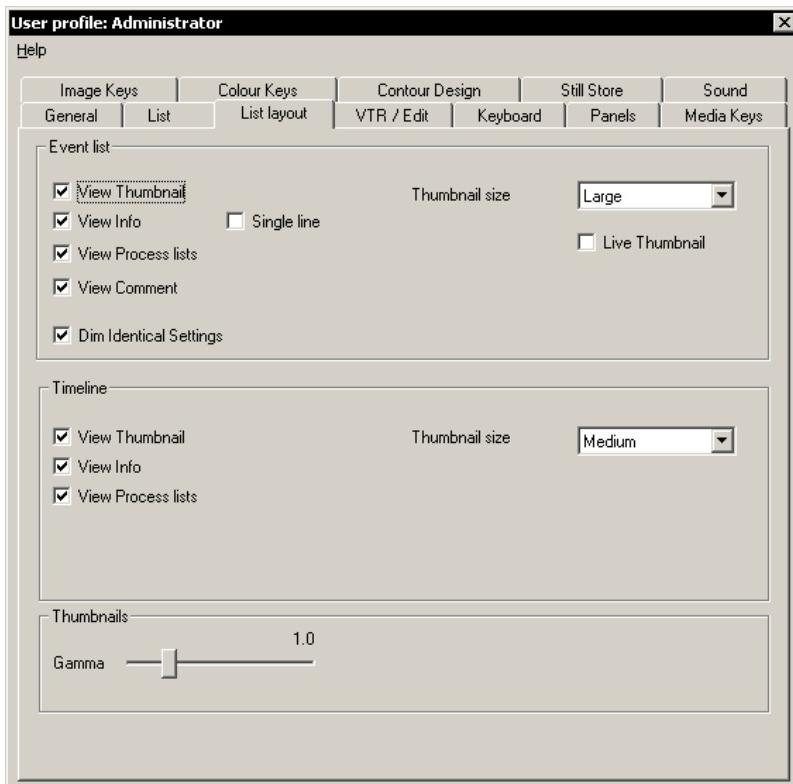
The List layout page determines how the Event List and the Timeline (Valhall Premium only) will appear.

Event list

View Thumbnail
Valhall Premium only

If enabled, displays a thumbnail of one of the first frames of the event, captured by the autoshot.

View Info
Shows the information field (including timecode, event no etc) when enabled.

View Process lists
When enabled, the process lists containing information on when settings and dynamics has been programmed, is shown. Should normally be enabled.

View Comment
Enable to see the comments field to the right.

Single line
Rearranges the layout of the information field to reduce the height of the event. Only makes an effect when thumbnail size has been set to small.

Dim Identical Settings
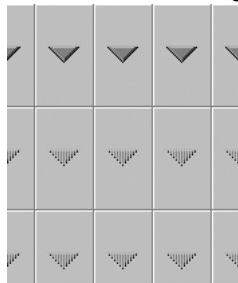
When enabled, indicates parameters in programmed events that are identical to the previous event with dimmed arrows.

Thumbnail Size
Determines the displayed thumbnail size in the lists.

Live Thumbnail
By enabling Live Thumbnail, the thumbnail at the current event will display the video sequence when in playspeed.

Timeline

Valhall Premium only.

View Thumbnail
If enabled, displays a thumbnail of one of the first frames of the event, captured by the autoshot.

View Info
When enabled, the information field (including timecodes, bookmarks etc) between the thumbnail and process lists, is shown.

View Process lists
When enabled, the process lists containing information on when settings and dynamics has been programmed, is shown.

Thumbnail Size
Determines the displayed thumbnail size in the lists.

Thumbnails

Gamma
Sets the brightness of the displayed thumbnails, not only for the event list and timeline but also for notes and still thumbnails.

VTR / Edit
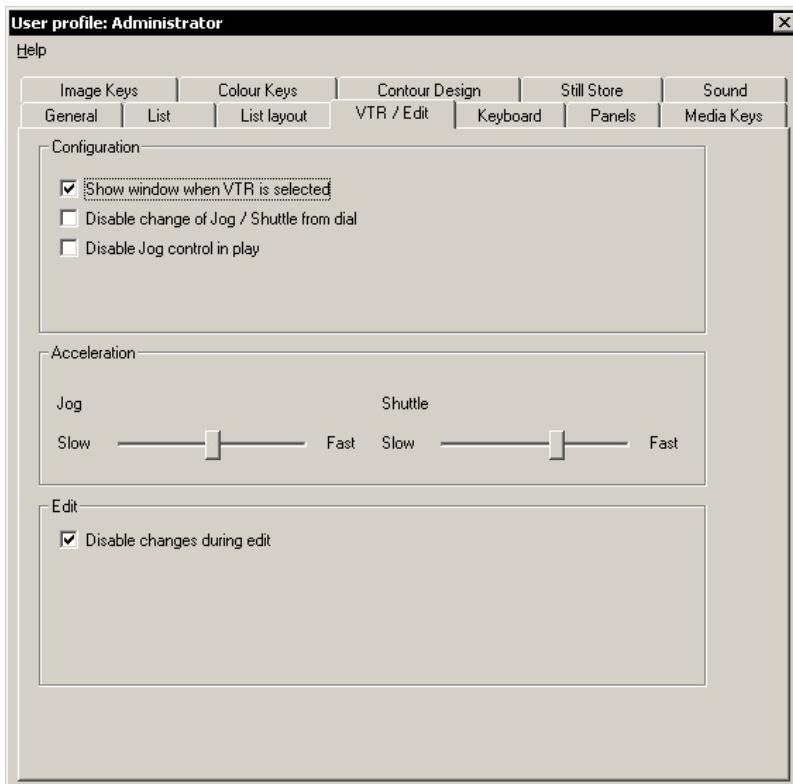
The VTR/Edit tab sets up some behaviours for the VTR controls and editing.

Configuration

Show window when VTR is selected
When selecting a VTR from the Media panel, the corresponding window will pop up if this control is enabled.

Disable change of Jog/Shuttle from dial
When enabled, jog/shuttle mode cannot be changed by pushing the dial, only the Jog key will change mode.

Disable Jog control in normal play
If enabled, this control prevents the VTR stopping, if the search dial is accidentally touched, during normal play. To jog or shuttle, first press the Stop key.

Acceleration

Jog
Sets the sensitivity of the VTR search dial when in Jog mode.

Shuttle
Sets the sensitivity of the VTR search dial when in Shuttle mode.

Edit

Disables changes during edit

Normally, during editing, the system is locked preventing any changes in the list and accidental keystrokes, trackball movements etc. This controls overrides this extra security allowing the system to behave the same during editing.

Keyboard
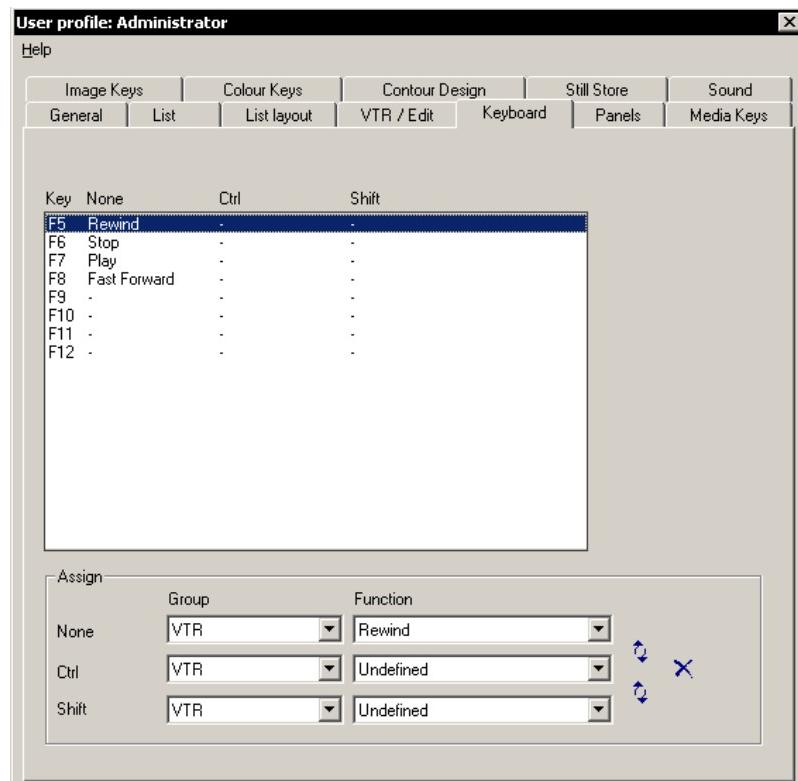
Function keys F5 through F12 in combination with shift or ctrl can be programmed to perform various operations.

Swaps programmed function.

Makes selected function key non-programmed.

Panels
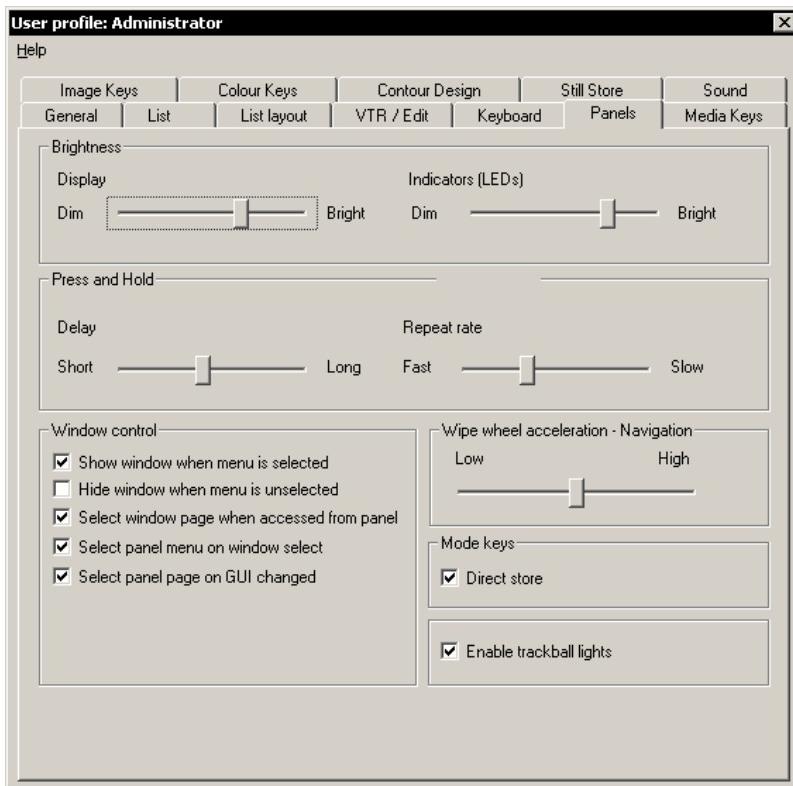
These controls affect the operation of the control panels (Colour, Image, Media). Only applicable for Valhall Premium+.

Brightness

Display
Sets the brightness/intensity of the displays to match room conditions.

Indicators (LEDs)
Sets the brightness/intensity of the key LEDs that are lit to show that the function is activated.

Press and Hold

Delay
Sets the minimum amount of time in order to active the "delayed" (press and hold) function of knobs and buttons.

Repeat rate
Determines how fast commands are repeated when e.g. up and down keys are kept pressed.

Window Control

Show when menu is selected
When selected, process window will appear when selected from the option selection menu on the Image panel.

Hide when menu is unselected

If this item is selected, the previously displayed process window is hidden when a new is selected from the option selection.

Select page when accessed from panel

When selecting a page on the colour or image panel, corresponding page on the processing window in the GUI will be selected if this control is enabled.

Select panel menu on window select

When a processing window is put in focus in the GUI, the corresponding processing menu is selected on the panels.

Select panel page on GUI changed

When selecting a page in the GUI, corresponding page on the top displays of the panels is selected.

Wheel Acceleration - Navigation

Determines the acceleration/sensitivity of the Wipe wheel when used for navigation/browsing.

Mode Keys

Direct Store

The mode keys (Bookmark, Notes, Still with the exception of List) can be used in two ways to activate:

Normal

By pressing the mode key, the operating mode will be changed accordingly and the corresponding window opened. Using the Valhall key in combination with the mode key will store at next available position.

 Enables note operating mode and opens note window.

 + Stores a note in next free position.

Direct Store

In this mode, The Valhall key is used in combination the mode key to change mode while pressing the mode key will store at next available position.

 Stores a note in next free position.

 + Enables note operating mode and opens note window.

Misc.

Enable trackball lights
If checked, enables the trackball backlight on both Colour and Image control panels.

Media Keys
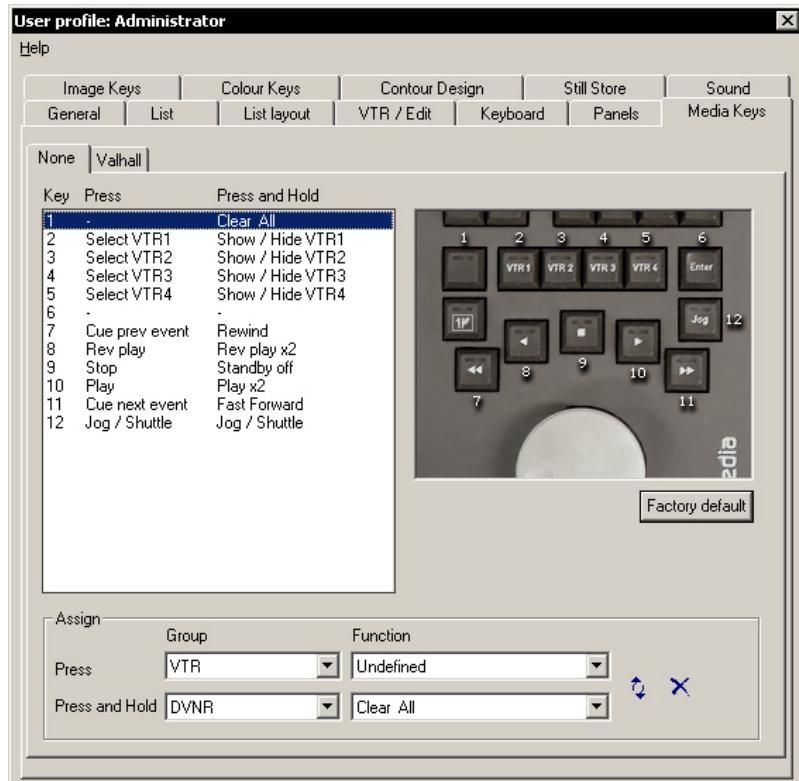
Only applicable for Valhall Premium+.

The transport control keys are user programmable to match your specific requirements. In addition, the Valhall key increases the number of controls by providing a second set of programmable transport controls.

First select a group of functions and then select the specific function.

Functions can be programmed for both Press as well as Press and Hold operations.

Swaps programmed function.

Makes selected function key non-programmed.

Factory Default
Digital Vision provides default settings for the programmable function keys. To return to these settings, click on the Factory default button.

Image Keys
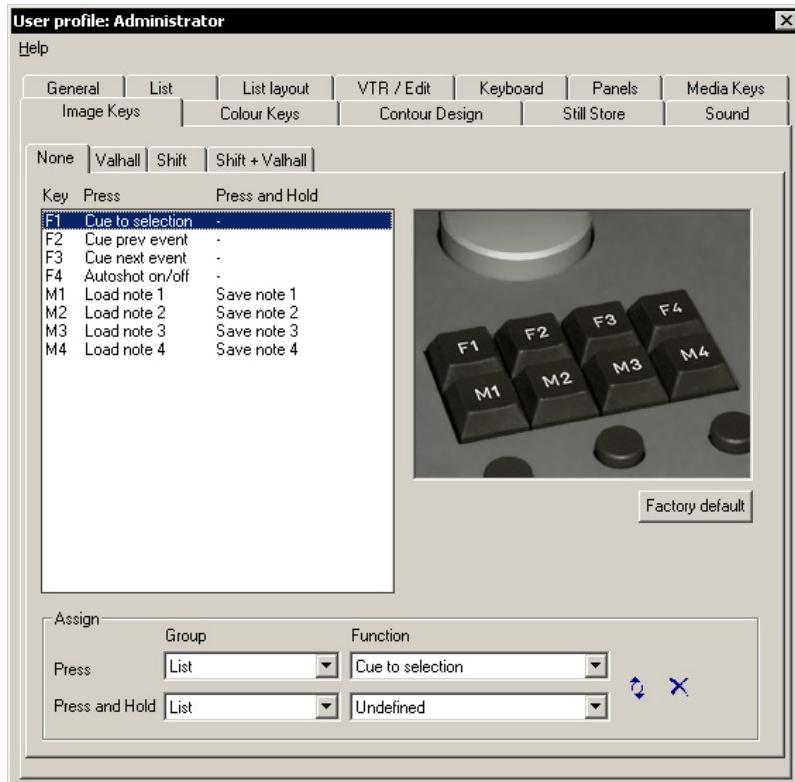
Only applicable for Valhall Premium+.

Pre-defined functions can be mapped to the programmable function keys. Modifier keys Valhall and Shift can be used to access another three sets of functions.

Labels F1-F4 and M1-M4 does not restrict the key usage to functions and memories.

First select a group of functions and then select the specific function.

Functions can be programmed for both Press as well as Press and Hold operations.

Swaps programmed function.

Makes selected function key non-programmed.

Factory Default
Digital Vision provides default settings for the programmable function keys. To return to these settings, click on the Factory default button.

Colour Keys
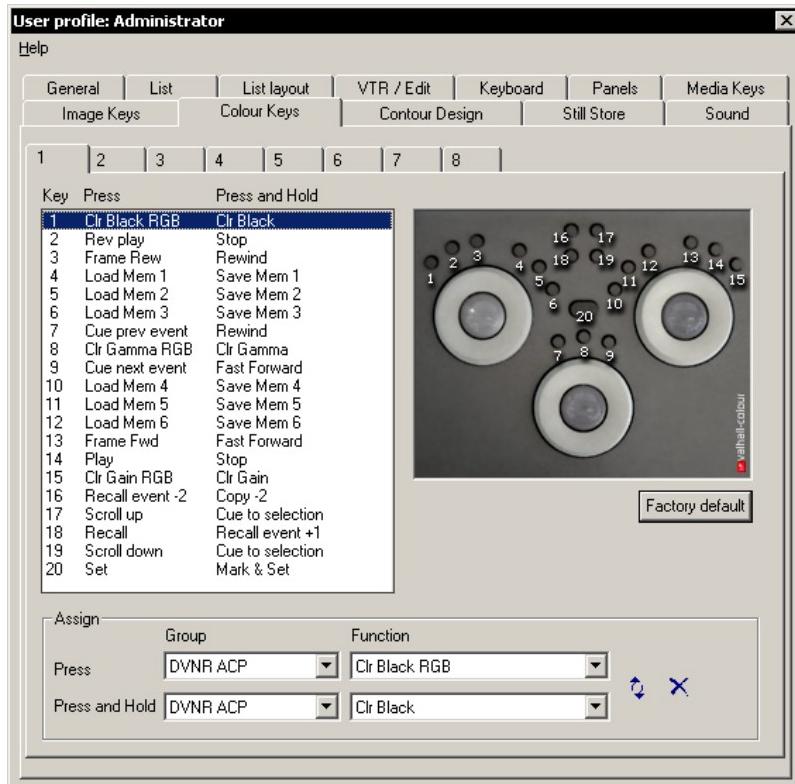
Only applicable for Valhall Premium+ Colour.

The Colour panel provides a large number of programmable function keys within easy reach from the trackballs. They can be programmed individually for each user to perform various operations including memories, machine and list control.

First select a group of functions and then select the specific function.

Functions can be programmed for both Press as well as Press and Hold operations.

$\updownarrow$ Swaps programmed functions.

$\times$ Makes selected function key non-programmed.

Factory Default
Digital Vision provides default settings for the programmable function keys. To return to these settings, click on the Factory default button.

Sets
The Colour panel can also provide differents sets of layouts for the programmable function keys depending on selected option, which can be useful when e.g. controlling the ZOM from the Colour panel.

Contour Design

Valhall supports various multimedia controllers from Contour Design.

Read more about the products on Contour Design's webpage http://www.contourdesign.com/
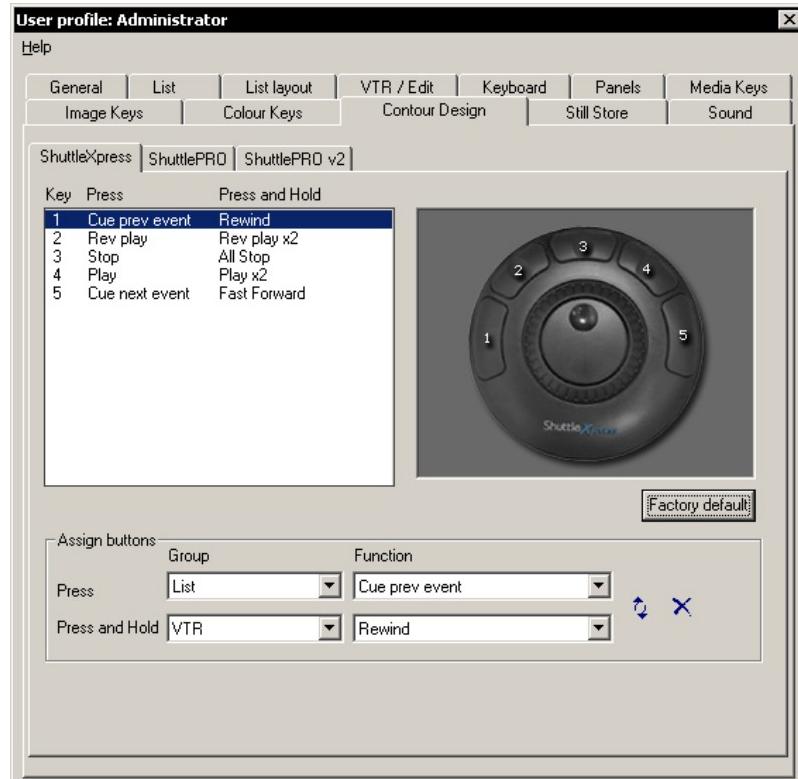
ShuttleXpress

The ShuttleXpress provides five programmable function keys within easy reach from the jog/shuttle dial. They can be programmed individually for each user to perform various operations including memories, machine and list control.

First select a group of functions and then select the specific function.

Functions can be programmed for both Press as well as Press and Hold operations.

🔁   Swaps programmed functions.

✕   Makes selected function key non-programmed.

⚠️   **Note!** The ShuttleXpress page is not accessible unless the ShuttleXpress drivers are installed and the device is connected.
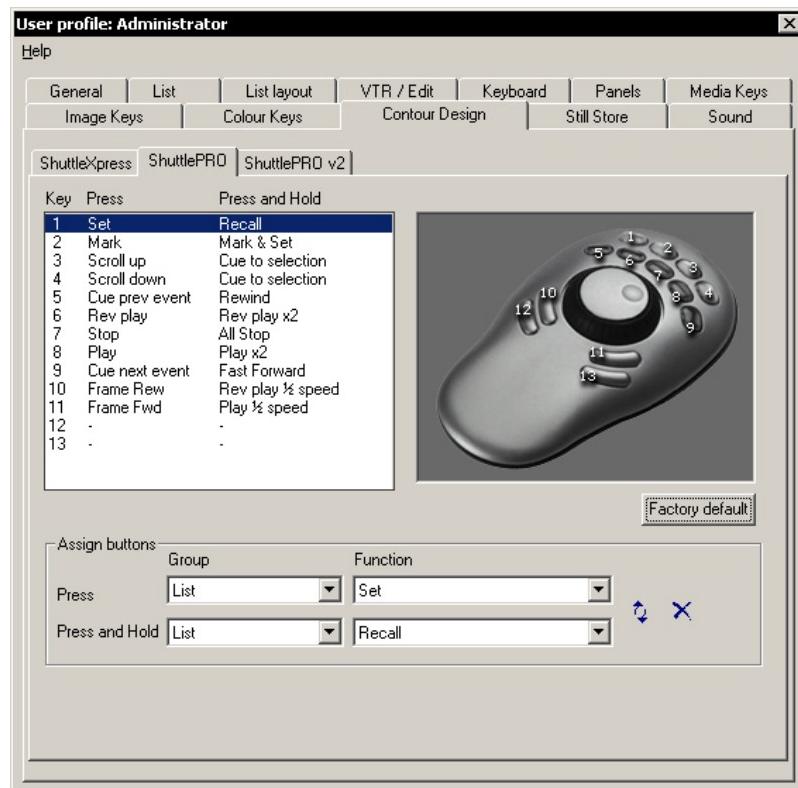
ShuttlePro

The ShuttlePRO provides a number of programmable function keys within easy reach from the jog/shuttle dial. They can be programmed individually for each user to perform various operations including memories, machine and list control.

First select a group of functions and then select the specific function.

Functions can be programmed for both Press as well as Press and Hold operations.

↕   Swaps programmed functions.

✕   Makes selected function key non-programmed.

⚠   **Note!** The ShuttlePRO page is not accessible unless the ShuttlePRO drivers are installed and the device is connected.

ShuttlePro v2
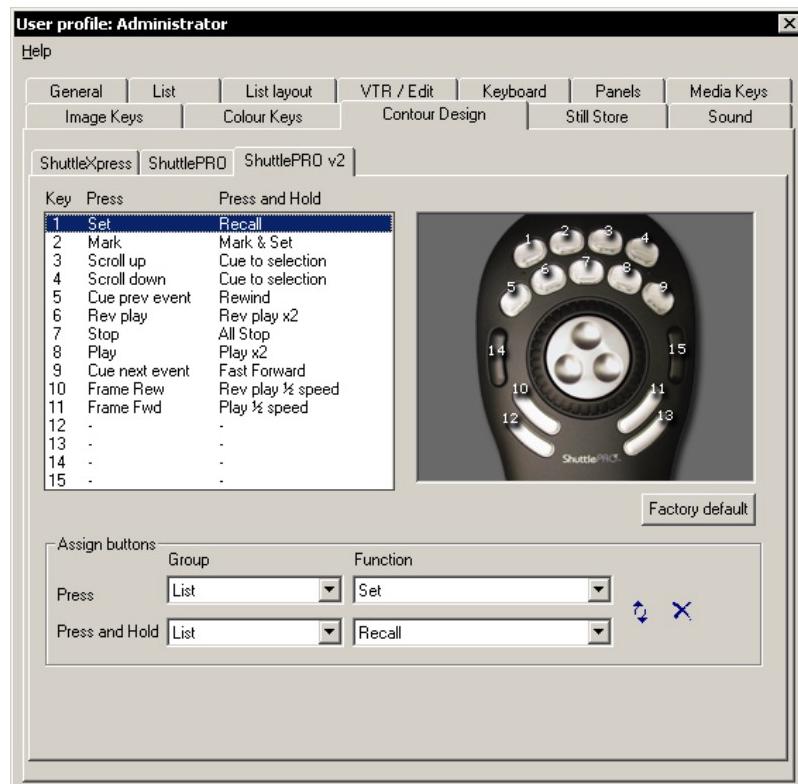
The ShuttlePRO v2 provides a number of programmable function keys within easy reach from the jog/shuttle dial. They can be programmed individually for each user to perform various operations including memories, machine and list control.

First select a group of functions and then select the specific function.

Functions can be programmed for both Press as well as Press and Hold operations.

| ↕ | Swaps programmed functions. |

| ✕ | Makes selected function key non-programmed. |

⚠ **Note!** The ShuttlePRO v2 page is not accessible unless the ShuttlePRO v2 drivers are installed and the device is connected.

Still Store
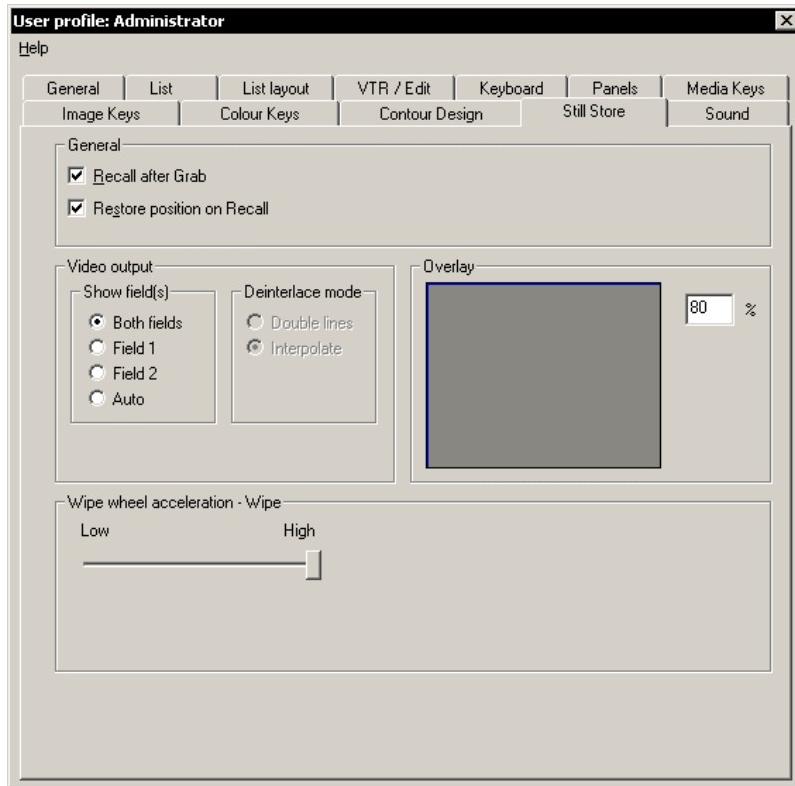
General

Recall after Grab
If enabled, immediately outputs the grabbed still on the video monitor.

Restore position on Recall
The Still Store provides horizontal/vertical positioning of the still. If Restore position on Recall is enabled, the position of the next recalled still will be restored to factory default.

Video Output

Show field(s)
The output from the still store can be set to display both fields, field 1, field 2 or auto, where the settings of the Media page in the DVNR setup is used. Displaying only one field is especially useful for video originated material with motion between each field.

Deinterlace mode
When field 1 or field 2 has been selected, de-interlaceing is automatically performed, either by doubling lines or interpolating.

Overlay

The overlay controls sets the position and size of stills when used in "Picture within a Picture" mode.

Wheel Acceleration - Wipe

Determines the acceleration/sensitivity of the Wipe wheel when used in Still mode.

Sound
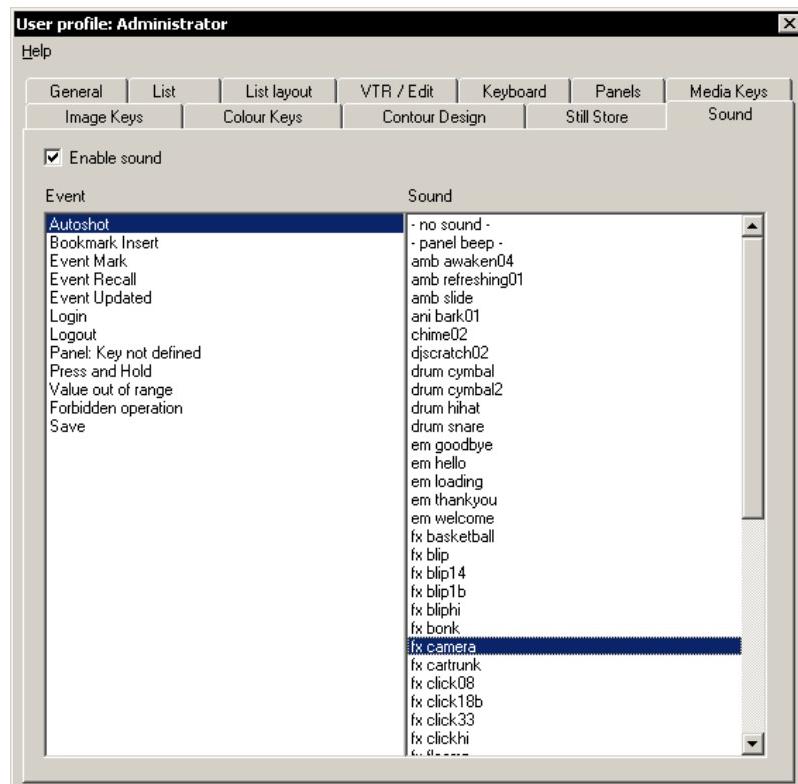
Sound alerts can be attached to specific events like Autoshot, prompts etc. Only applicable if speakers are connected.

Note! Sound files provided by Digital Vision may not be used in any other application than Valhall.

Adding sounds

Own sound files in .wav format can be added in the directory
c:\program files\Digital Vision\Valhall\sound files\

13. DVNR Setup

General

The following is a detailed description of the DVNR Setup window and its controls:

Please check that proper input, output, field rate etc. is set correctly before starting the work by clicking on OK.

The DVNR Setup window may look slightly different depending on which image processing device is controlled.

Note! DVNR Setup settings are stored on a project basis and are not programmable in the list with the exception of origin and field dominance, which are stored in both the project and in the list.

DVNR1000-422

Media
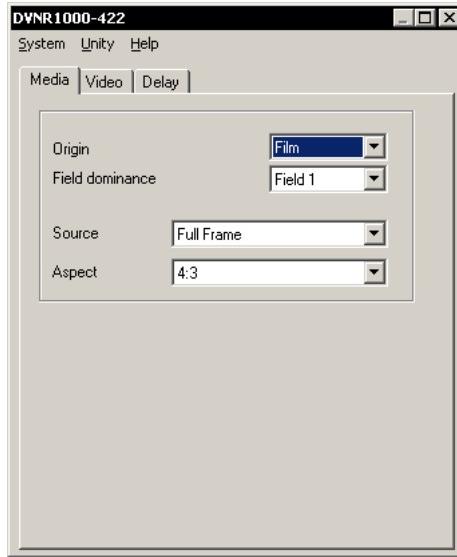
Origin
Select if input is Film (frame based) or Video (field based) originated.
Important for internal processing as e.g. ASC.

Field dominance
Select 1st or 2nd field dominance depending on the input. This is
mainly applicable to 50 Hz processing of film based original.

Note! Both origin and field dominance can be changed in the list on an
event basis.

Source
Set the picture source format (for use with thumbnails).

Aspect
To display the correct aspect of thumbnails, set to 4:3 except for
anamorphic (16:9) sources.
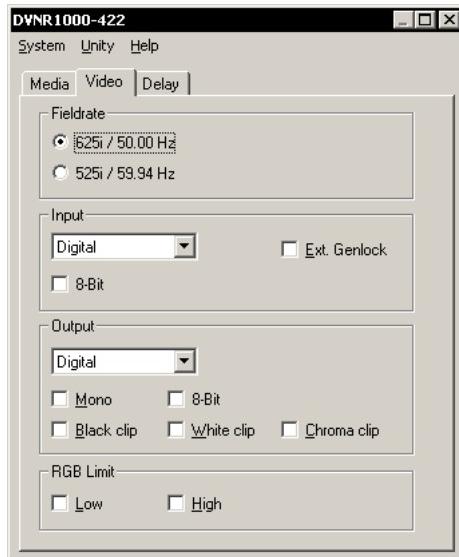
Video

Fieldrate
Selects input field rate e.g. 50, 60 Hz

Input
Select input format

Ext Genlock
The DVNR normally locks the output to the incoming video signal. If Genlock is enabled, the Frame Store Synchroniser locks to the B&B signal fed to the Genlock input.

8-bit
The input is normally 10 bit, but can be set to 8 bit with this control.

Output
Select output format. Note that this also affects the delay through the system (See "Delay" in this section).

Mono
When enabled, sets video output to monochrome.

8-bit
The output is normally 10 bit, but can be set to 8 bit with this control.

Black
Enables black hard clip at luma level 64 (0%).

White
Enables white hard clip at luma level 940 (100%).

Chroma
Enables chrominance hard clip at CbCr levels 64/960.

RGB Limit
N/A

Delay
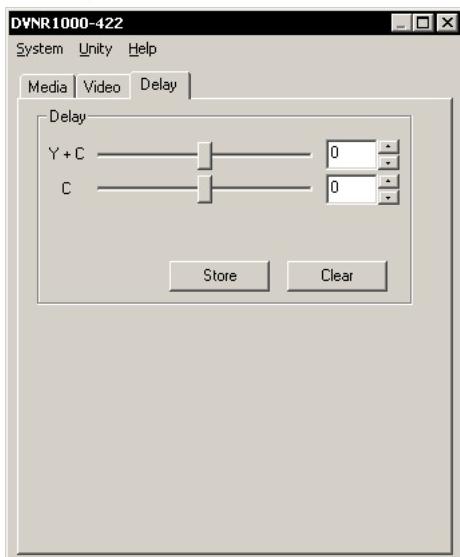
This feature enables the user to re-time the total delay from the selected input to the selected output of the system by approx. +/- 2 lines in steps of 1 pixel. The "Output delay" is stored separately for each "Input", "Output" and "Genlock" setting.

Right-click on a slider to set default values.

Press Clear to return to factory defaults or Store to store any changes you have done.

Y+C
Adjusts the total delay through the system

C
Adjusts the chroma delay only

System

Store power-up default
Programs the DVNR so that it automatically starts up with the current settings.

Clear all
Sets all processing options to defined unity.

Bypass all
Sets all processing options to electronic bypass.

Unity

The definable unity is used for every Clear key on the panels and Clear buttons in the GUI. It is also used for the option to set all events to unity during an EDL import and the "Return to unity" option during Autoshot operation.

The definable unity is stored separately for each project and is inherited when creating new projects (based on another project).

Read more on page 113.

DVNR1000-HD

Media

Origin
Select if input is Film or Video originated. Important for internal processing as e.g. ASC.

Field dominance
Select 1st or 2nd field dominance depending on the input. This is mainly applicable to 50 Hz processing of film based original.

Note! Both origin and field dominance can be changed in the list on an event basis.

Source
Set the picture source format (for use with thumbnails).

Aspect
To display the correct aspect of thumbnails, set to 4:3 except for anamorphic (16:9) sources.

Video Input
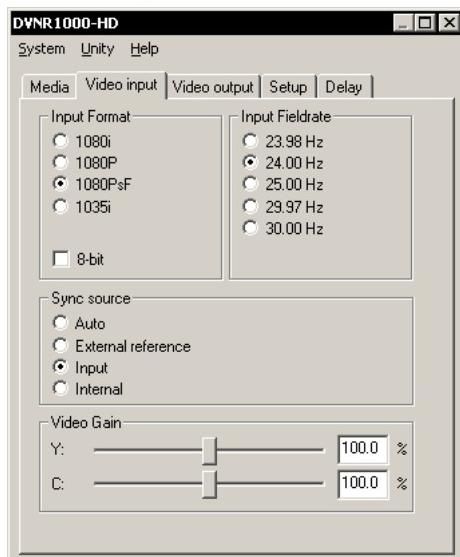
Input Format

Sets the line format on the input.

8-bit

The input is normally 10 bit, but can be set to 8 bit with this control.

Input Fieldrate

Sets the input frequency.

Sync source

Auto	N/A
External Ref.	Locks the Frame Store Synchroniser to the B&B signal fed to the Genlock input.
Input	Locks the Frame Store Synchroniser to the input signal
Internal	Locks to internal oscillator on the input board. No external signal is needed.

Video Gain

Separately controls luminance and chrominance gain with a range of 0% to 200% of the input signal.

Right-click on a slider to set default values.

Video Output

Format

For some input configurations it is possible to do a conversion to another format. In this case, you will be able to select an output format.

When set to Auto, the output format is identical to the selected input format.

Clip

Black
Enables black hard clip at luma level 64 (0%).

White
Enables white hard clip at luma level 940 (100%).

Chroma
Enables chrominance hard clip at CbCr levels 64/960.

RGB
Clips the signal to legal RGB colour space at levels 64/960.

Output

8-bit
The output is normally 10 bit, but can be set to 8 bit with this control.

Mono
When enabled, sets video output to monochrome.

Setup

Scene Change Detector

Sensitivity
Adjust sensitivity until the Scene Detector picks up all scene changes.

Threshold
By increasing the Threshold value, the amount of false detections may be reduced.

Note! Setting this value too high may cause real scene changes not to be detected.

Film 3:2

The 3:2 detector need to have the below thresholds fulfilled in order to detect a change in the 3:2 phase.

Threshold max value
This threshold is used for detecting the repeated field. In an ideal situation the 5th field in a 3:2 sequence should be an identical copy of the 3rd field. However, by setting the Threshold max value higher, analogue tape noise and other errors are ignored.

Default value is 1. Repeated fields may not be detected at all if the threshold is set to 0.

Threshold min value
This threshold is used for detecting motion. High values are used for picture material with much motion. Low values are used for picture material with little motion.

Default value is 8.

Delay

This feature enables the user to re-time the total delay from the selected input to the selected output of the system by approx. +/- 2 lines in steps of 1 pixel (74 ns).

Right-click on a slider to set default values.

Press Clear to return to factory defaults or Store to store any changes you have done.

Y+C
Adjusts the total delay through the system

C
Adjusts the chroma delay only

System

Store power-up default
Programs the DVNR so that it automatically starts up with the current settings.

Clear all
Sets all processing options to defined unity.

Bypass all
Sets all processing options to electronic bypass.

Unity

The definable unity is used for every Clear key on the panels and Clear buttons in the GUI. It is also used for the option to set all events to unity during an EDL import and the "Return to unity" option during Autoshot operation.

The definable unity is stored separately for each project and is inherited when creating new projects (based on another project).

Read more on page 113.

DVNR1000-HD RGB

Media
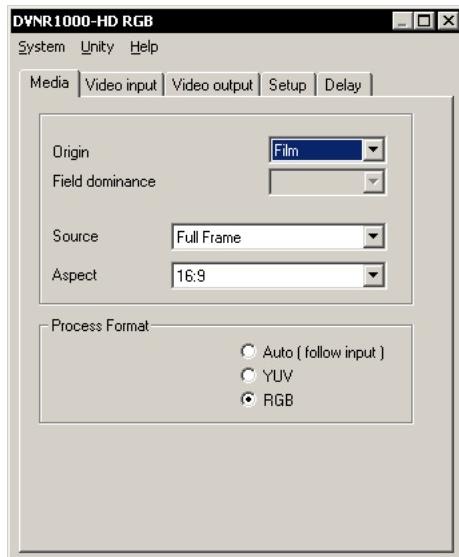
Origin

Select if input is Film or Video originated. Important for internal processing as e.g. ASC.

Field dominance

Select 1st or 2nd field dominance depending on the input. This is mainly applicable to 50 Hz processing of film based original.

**Note!** Both origin and field dominance can be changed in the list on an event basis.

Source

Set the picture source format (for use with thumbnails).

Aspect

To display the correct aspect of thumbnails, set to 4:3 except for anamorphic (16:9) sources.

Process Format

The internal process format typically follows the input format, as selected on the Video input page of the DVNR1000-HD RGB setup, but can be forced to YUV or RGB.

Video Input
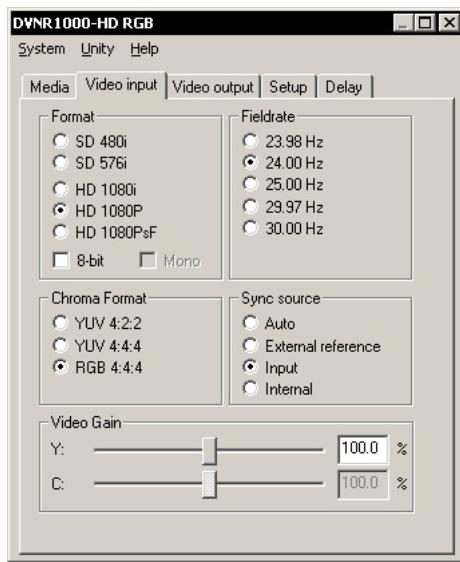
Format

Sets the line format on the input.

8-bit
The input is normally 10 bit, but can be set to 8 bit with this control.

Fieldrate

Sets the input frequency.

Chroma Format

Sets the input chroma format and typically adapts the internal
processing to the same format.

Sync source

Auto	N/A
External Ref.	Locks the Frame Store Synchroniser to the B&B signal fed to the Genlock input.
Input	Locks the Frame Store Synchroniser to the input signal
Internal	Locks to internal oscillator on the input board. No external signal is needed.

Video Gain

Separately controls luminance and chrominance gain with a range of 0%
to 200% of the input signal.

Right-click on a slider to set default values.

Video Output

Format

For some input configurations it is possible to do a conversion to another format. In this case, you will be able to select an output format.

When set to Auto, the output format is identical to the selected input format.

8-bit

The output is normally 10 bit, but can be set to 8 bit with this control.

Chroma Format

Normally set to Auto, where the output chroma format is identical to the selected input chroma format.

Clip

Y

Enables adjustable luminance hard clips. When enabled, typically set to 64 (0%) and 940 (100%)..

C

Enables adjustable chrominance hard clips at CbCr levels. When enabled, typically set to 64 and 960.

RGB

Enables adjustable lower and upper RGB clips for legal RGB colour space. When enabled, typically set to 64 and 960.

Mono

When enabled, sets video output to monochrome.

Analogue HD monitor

For HD operation, an analogue output is available, which can be set to YUV or RGB.

Setup

Scene Change Detector

Sensitivity
Adjust sensitivity until the Scene Detector picks up all scene changes.

Threshold
By increasing the Threshold value, the amount of false detections may be reduced.

Note! Setting this value too high may cause real scene changes not to be detected.

Film 3:2

The 3:2 detector need to have the below thresholds fulfilled in order to detect a change in the 3:2 phase.

Threshold max value
This threshold is used for detecting the repeated field. In an ideal situation the 5th field in a 3:2 sequence should be an identical copy of the 3rd field. However, by setting the Threshold max value higher, analogue tape noise and other errors are ignored.

Default value is 1. Repeated fields may not be detected at all if the threshold is set to 0.

Threshold min value
This threshold is used for detecting motion. High values are used for picture material with much motion. Low values are used for picture material with little motion.

Default value is 8.

Delay

This feature enables the user to re-time the total delay from the selected input to the selected output of the system by approx. +/- 2 lines in steps of 1 pixel (74 ns).

Right-click on a slider to set default values.

Press Clear to return to factory defaults or Store to store any changes you have done.

Y+C
Adjusts the total delay through the system

C
Adjusts the chroma delay only

System

Store power-up default
Programs the DVNR so that it automatically starts up with the current settings.

Clear all
Sets all processing options to defined unity.

Bypass all
Sets all processing options to electronic bypass.

Unity

The definable unity is used for every Clear key on the panels and Clear buttons in the GUI. It is also used for the option to set all events to unity during an EDL import and the "Return to unity" option during Autoshot operation.

The definable unity is stored separately for each project and is inherited when creating new projects (based on another project).

14. DVNR Processing

General Operation

Bypass

Each processing option is equipped with an electronic Bypass.
It can be accessed in one of the following ways:

Pressing the Bypass key on the Colour or Image panel or alternatively pressing the Valhall key and the corresponding option selection key on the Image panel.

Double-clicking on the menu bar or selecting Bypass from the control menu (top and leftmost menu in the processing window).

Bypass is indicated with [Bypass] after the option name in the menu bar.

Note! Unlike some other systems, the bypass function does not affect the video delay through the DVNR.

Bypass All

A bypass of <u>all</u> processing options can be done using the Byp All key on the Image panel.

Click on the BYP field in the status bar or double click in the background.

Definable Unity

The definable unity is used for every Clear key on the panels and Clear buttons in the GUI. It is also used for the option to set all events to unity during an EDL import and the "Return to unity" option during Autoshot operation.

The definable unity is stored separately for each project and is inherited when creating new projects (based on another project).

Recalling and Storing

To recall unity, press 0 and then the Note key.

To store unity, press 0 and the press and hold the Note key.

To recall unity, go to the DVNR setup, select menu Unity > Recall. To store unity, select menu Unity > Store.

Factory Default

To load factory defaults, go to the DVNR setup, select menu Unity > Factory Default. To store the factory default as unity, select menu Unity > Store.

Setting Unity for a Single Processing Option

In addition, it is possible to Recall, Store and Restore unity for a single processing option in the same manner as provided in the DVNR setup.

The unity selection is found in the left-most menu of the processing option window.

15. ALS, Anti-Aliasing

About the Anti-Aliasing

The ALS is an indispensable tool when there is need to improve negative side effects from out-of-band vertical frequencies, showing up as undesired line flicker or "twitter". Treats scenes with venetian blinds or car grills appearing in their best light, as sharp as the line structure in the interlaced television system will allow.

With two filters and fine user controls in 256 steps the ALS will handle both field (video) and frame (film) based source material in an optimum way. In addition ALS features a special field correlator mode enabling "film look" on video originated material.

Controls
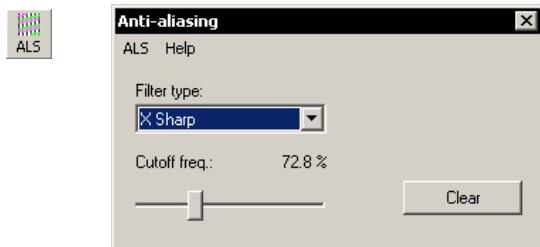
Anti-Aliasing window

Filter Type

Sharp	Sharp cut-off (Recommended setting)
X Sharp	Very Sharp cut-off
Film Look	Simulates film by removing a field and recreating it by interpolating the remaining field. It has little effect on film-based material, but dramatically reduces the resolution on video-based material containing motion. Suitable for MPEG1 compression and when using a high compression ratio.

Cutoff

The cutoff controls the amount of filtering and selects how much, in percent, of the maximum vertical bandwidth that is kept. 100% is bypass.

Start with a high value and lower until flicker is removed.

Recommended setting is around 70%.

16. BWF, Brickwall Filter with Area Isolation

About the Brickwall Filter

As the name implies, the BWF provides an extremely sharp cut-off beyond a user defined point. The purpose of this is to create an accurately defined spectral content of material, intended for various types of compression processing, e.g. MPEG mastering. By doing so, and in conjunction with other tools in the DVNR system, the image quality subjected to compression can in most cases be dramatically improved.

The BWF processing can be isolated to selected areas in the scene. This allows picture quality to be maintained in the artistic focus of the scene.

Controls
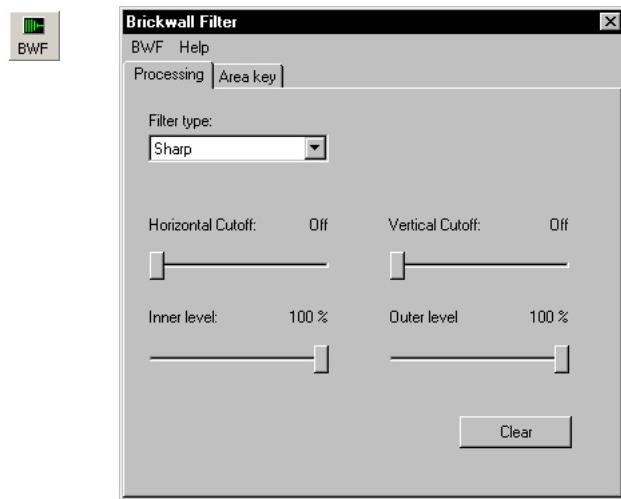
Brickwall Filter window

Filter Setup

Cut-off Frequency
Settings for horizontal filtering of the luminance:

31 values between 2.0 and 5.5 MHz.

The horizontal filtering for chrominance runs at approx. 0.55 of the above values.

The vertical filtering is at the equivalent field-line cut of frequencies.

Filter Type
A number of different filter characteristics are available:

Sharp	Sharp cut-off
X Sharp	Extremely Sharp cut-off
Diag Sharp	More diagonally sharper cut-off than vertically or horizontally
Film Look	Simulates film by removing a field and recreating it by interpolating the remaining field. It has little effect on film based material, but dramatically reduces the resolution on video-based material containing motion. Suitable for MPEG1 compression and when using a high compression ratio.

Field / Frame mode
In the Frame mode, all filtering in the BWF is done with the help of picture information from a frame, consisting of two consecutive fields.

In Field mode, only picture information from one field is used.

Frame mode is selected in the BWF menu.

Area Key
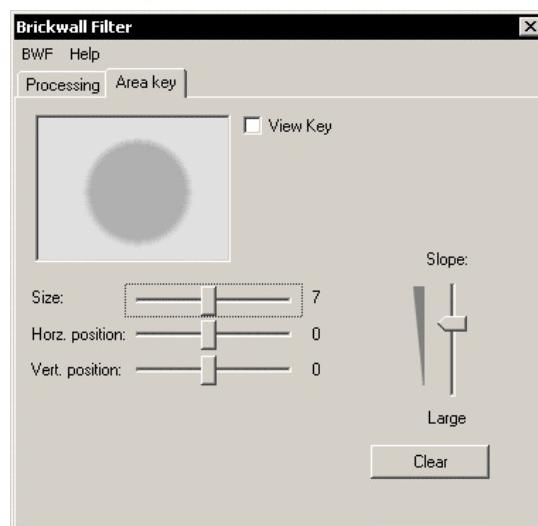
This small display shows the position and size of the key. Click and drag to move the key.

The BWF processing can be isolated, using an internal key shaped as a circle, to a selected area in the picture. The small display in the Brickwall Filter window will indicate the position and size of the key as well as the amount of filtering. The brighter, the more filtering.

To see the key in the picture, use the **View Key** control.

Filter Level Inner/Outer
The user can set the level of filtering between 0% and 100% independently for the area inside and the area outside the circle.

You will have no brickwall filter effects at all if both of these controls are set to 0% or *Size* is set to 0 and Filter Level Outer is 0%.

Slope

The Slope control sets how sharp the transition between the two filter settings should be. Ranges from Low to X-Large. Low is a direct cut from inner to outer filtering level.

Size

Sets the size of the circle between 0 and 15. The value 0 means that no circle is visible and only outer filter level has any effect. When set to 15, the circle almost covers the entire picture, after which only the inner filtering level has any effect.

Place

Click on the Place key on the control panel to position the circle with the trackball.

You can also click and drag the circle in the small display. Alternatively use the **Horizontal** and **Vertical Position** controls in the GUI.

View Key

Use this control to see where in the picture the internal key (the circle) is placed. Areas with none or a small amount of filtering will be dark while areas with a high filtering level will be bright.

Operation

Using the BWF on text

If you want to highlight (or not soften) some areas in the picture, like text, use the area isolation:

- Start with a low (or none) **Inner** Filtering Level and a high **Outer** Filtering Level.
- Select 3.0 MHz or your normal settings as **Cut-off** frequencies
- Set **Size** to 7
- Activate **View Key**
- Place the circle by clicking and dragging it in the GUI or select **Place** from the Image panel and then using the trackball.
- Adjust the **Size** control so that the circle covers the text
- Deselect View Key
- Adjust both filter levels and cut-off frequencies to your own taste
- Adjust the **Slope** for best result (You may have to increase the Size one or two steps if the outer filtering starts affecting the outer parts of the text)

17. AGR4 ME, Adaptive Film Grain & Noise Reduction

About Adaptive Film Grain & Noise Reduction

AGR4 is Digital Vision's film grain and electronic noise reducer aimed for film, videotape restoration and MPEG pre-processing.

The AGR4's advanced motion processing and adaptive 3-D filters, including a new Edge Preserving Spatio-Temporal filter and optional motion estimation, allow facilities to produce cleaner and sharper pictures from film and video originated material than ever before.

The AGR4 can be used in a vast range of applications, from reducing the intensity of film grain while preserving its structure to wiping out noise on video material.

Controls – Basic mode
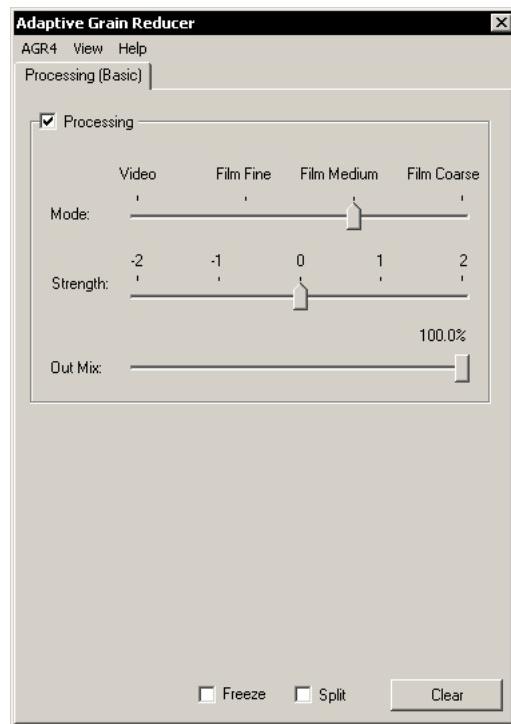
The AGR4 basic mode provides simple control of the grain/noise reduction without sacrifying the basic. Access by selecting menu AGR4 > Basic Controls.

Processing

Tick the checkbox to enable AGR4 processing.

Mode

The Mode selection should be set according to how the original material was captured. Select Video for interlaced video material and Film for film originated material. In case of progressive video material, set Film Fine.

Strength

The amount of grain/noise reduction is automatically set-up in the basic mode. Use the strength to trim the grain/noise reduction.

Out Mix

Sets the mix between the processed signal and the input signal. This makes it possible to mix in some of the original grain into the processed picture for a better film look.

Freeze

The freeze control does a frame freeze useful to capture the effects of grain/noise reduction.

Split

The Split function can be used to compare processed against the original source material. When enabled, one half of the picture is processed and the other half is unprocessed.

Controls
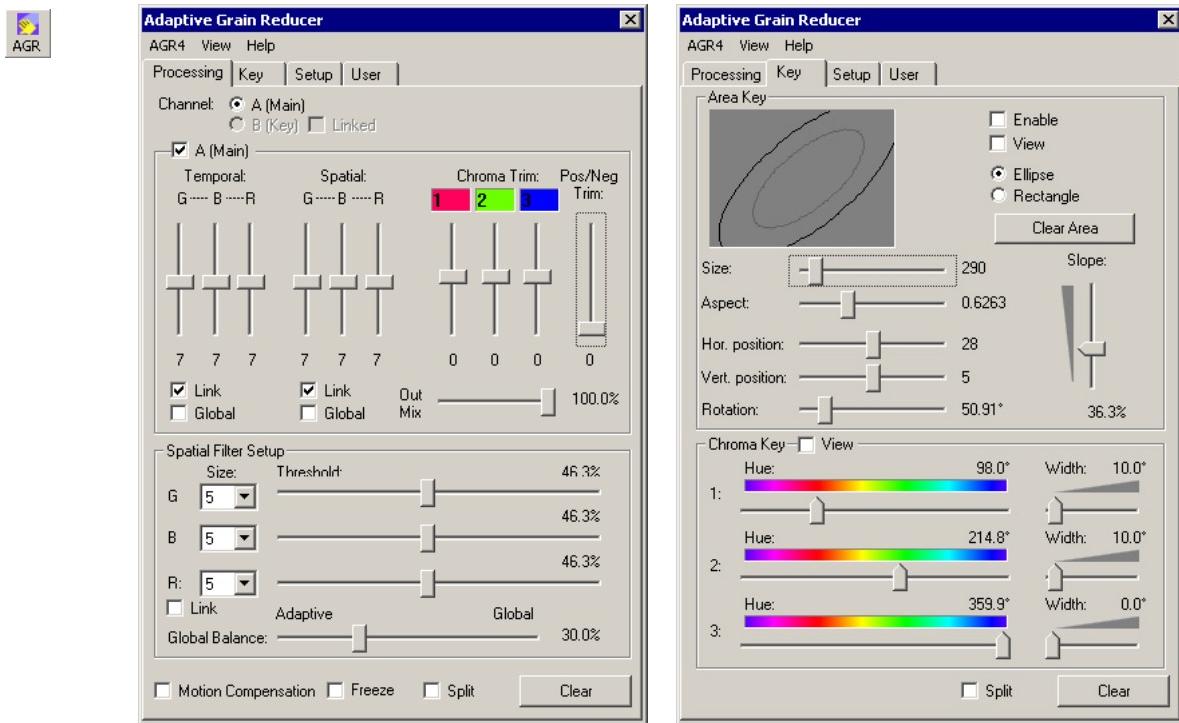
General

The selection of **Video**/**Film Fine**/**Film Normal**/**Film Coarse** (on the Setup page) adapts the temporal filtering in respect to grain/noise size.

Temporal Filtering

The newly redesigned Temporal/Recursive filters allow for increased grain and noise reduction with reduced motion artefacts.

In the DVNR1000-HD RGB, the AGR4 processes either in RGB or YC (YUV) depending on selected process format in the DVNR setup. In all other systems the processing format is YC.

Use **Temporal Strength** to set the amount/level of temporal recursive filtering. The recursive filtering is the most effective filter in terms of reducing grain/noise.

A special function can **Link** the three RGB or alternatively the two YC settings together.

The AGR4 is an Adaptive grain and noise reducer and thus disables the temporal/recursive processing of all moving edges within the image to

assist in the reduction of motion artefacts. **Global Temporal** enables filtering of the whole picture regardless of motion (may cause excessive smearing in the picture) for maximum temporal filtering.

Motion Compensation

The AGR4 is a fully motion compensated noise/grain reducer thanks to an optional Motion Estimation (ME) module. This means that much more aggressive settings can be used without introducing smearing.

Motion Compensation should normally be enabled.

Spatial Filtering

The Edge Preserving Spatial filtering complements the adaptive temporal filters by processing grain and noise in portions of the image that are detected as moving while living non-moving areas unaffected. The spatial filtering is done "upstream" of the temporal filters and works in unison with the AGR4's motion processing.

The Edge Preserving Spatial Filter is set up based on the grain/noise **Size** in pixels by lines and a **threshold**.

The threshold determines when to filter depending on the intensity of the surrounding pixels. If there is a high enough intensity/contrast (e.g. an edge) between the grain/noise and surrounding pixels, filtering will not occur. A low setting will only affect low intensity pixels (flat areas) while a high setting will start to affect high intensity pixels (edges)

The amount/level of spatial filtering is set by **Spatial strength**.

Global Spatial enables filtering of the whole picture by switching of the motion adaptation (may cause excessive softening of the picture if the Spatial filter is not set up correctly). A moderate level of Global Spatial filtering can be used as a "basic" level of grain and noise reduction before using the temporal filtering.

Global Balance allows a combination of the "basic" level of spatial filtering and motion adaptive spatial filtering. Maximum filtering according to Spatial strength is achieved in areas with motion.

Optimising the Spatial Filter

1. Set Spatial Strength and Spatial Filter Setup (Size, Threshold) to maximum

2. Set Global Spatial to On

3. Adapt the spatial filter to the noise/grain size by decreasing Size in the Spatial filter setup to as low values as possible still with grain/noise being removed

4. Decrease Threshold in the Spatial filter setup until edges are not affected (a typical setting is around 8-20%)

5. Decrease Spatial Strength until a desired level of spatial filtering is achieved

6. Choose whether Global Spatial should be set to On (filtering of the whole picture) or Off (filtering only in areas with motion)

Chroma Adaptation

3 independent channels of chroma adaptation with a hue resolution of approx. 1° allows adjustment of noise reduction levels (both spatial and temporal) in the regions of the selected colour. Only colours with a higher saturation of approx. 5% will be detected.

Select a colour in one of the chroma adaptation channels.

To accurately see which parts of the picture that are affected by the **Chroma adaptation**, enable the **View Chroma Key** function whereupon the areas in the picture affected by the chroma adaptation will remain coloured and the areas not affected will turn monochrome. The adaptation includes a soft edge that will not be visible in the View mode.

Adjust **Hue** and/or **Width** if necessary to isolate the colour further.

After selecting the colours using the chroma adaptation, the operator may use the corresponding **Chroma trim** control to adjust the grain/noise reduction for each selected colour. Chroma trim allows for the boosting or cutting of both the spatial and temporal filter settings within the selected colour.

Pos/Neg Profile

The Pos/Neg profile allows the user to select the amount of noise reduction (both spatial and temporal) applied to the highlights or lowlights within the picture. This function is important when dealing with grainy images in positive or negative film stock.

- Positive film will generally show more grain in the lowlights.

- Negative film will generally show more noise in the highlights

Select **Pos** or **Neg** mode (on the Setup page). **Pos/Neg Trim** will adjust the noise reduction levels equally for all YUV/RGB channels in highlights (Neg) or lowlights (Pos).

The range of the luminance values affected by the Pos/Neg trim can be set by two thresholds. The **Low threshold** (pos) can be between 0% to 50% luminance and the **High threshold** (neg) between 50% and 100% luminance.

Pos Trim   *Pos/Low Threshold*
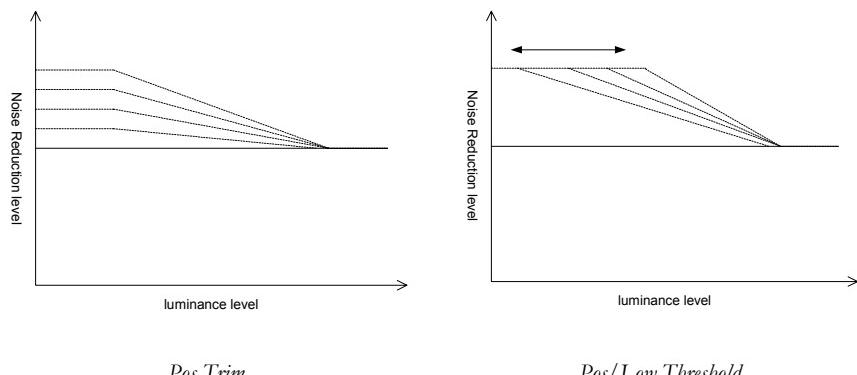
Out Mix

A final out mix control sets the mix between the processed signal and the input signal. This makes it possible to mix in some of the original grain into the processed picture for a better film look.

Miscellaneous Functions

Freeze does a frame freeze useful to capture the effects of the Temporal filters.

Split
The Split function can be used to compare processed against the original source material.

Viper Key Area

For the demanding jobs, a key area provides dual processing. The Viper area isolation includes two basic key shapes (rectangle or ellipse) to choose from with full control of size, aspect and rotation.

Channel A (main) and channel B (key) corresponds to the dual processors where channel A works outside and channel B inside of the defined key area.

If the key area is disabled, channel A is used.

First activate the area key, by checking **Area enabled**, then select type of **shape**, rectangle or ellipse, you would like to use.

Channel A noise reduction is applied outside of the area key while channel B noise reduction is applied inside (the inner line of) the area key. The adjustable **Slope** (the area between the two lines) provides soft transitions between the two channels.

To see the area key on the video monitor while adjusting the controls, check **View area key**.

Setup
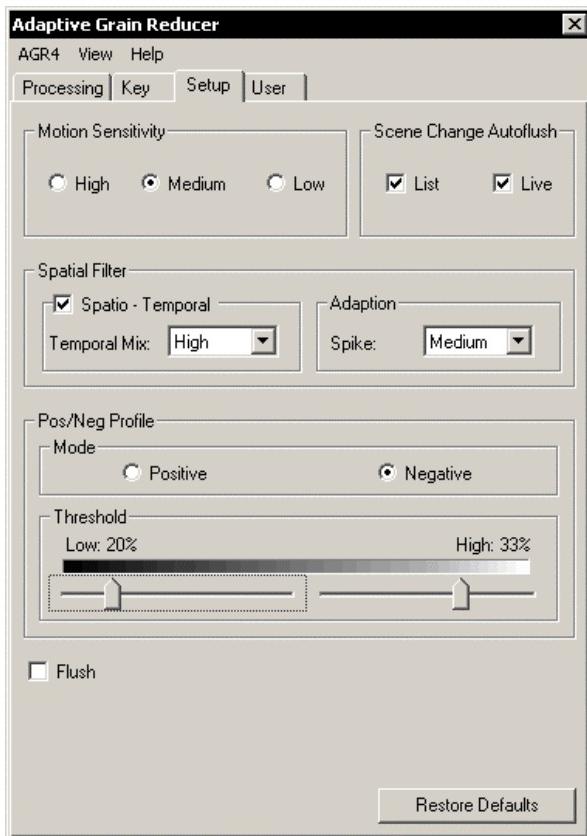
Motion Sensitivity

Adapts the temporal filtering in respect to grain size and intensity. High corresponds to fine grain and noise with low intensity.

Scene Change Autoflush

The autoflush function clears the internal framestore of the AGR4, preventing picture information "leaking" into the next scene.

When **List** is enabled, autoflush will occur at all events marked as scene changed and when **Live** is enabled, autflush will occur at the detected scene changes. As long as all events in the list that are labelled as scene changes actually are scene changes, the List control can always be enabled.

Spatial Filter

Spatio-Temporal

Extends the spatial filter to become a 3D spatio-temporal filter by including the use of temporal taps, for even more noise reduction.

Temporal Mix

Controls the balance between the spatial and temporal taps of the spatio-temporal filter. The setting affects the noise reduction achieved by the spatio-temporal filter, with more noise reduction for the higher settings. For fast motion material and a higher than default spatial filter threshold setting, a high temporal mix setting may increase the

probability of artefacts. In such cases, this setting may be lowered. For a lower than default spatial filter threshold setting, the "Full" setting may be used. The default setting "High" should be safe in most circumstances.

Adaptation

Spike
Enhances the spatial filter performance by incorporating a spike adaptation. The setting should be related to the grain/noise characteristics. A low setting (e.g. Narrow) is suitable for smaller grain & noise sizes and/or less pronounced variations in amplitudes and a high setting (e.g. Wide) is suitable for larger grain & noise and/or more pronounced variations in amplitudes.

Pos/Neg Profile

Mode
Sets Positive (more grain reduction in lowlights) or Negative (more grain reduction in highlights) Film mode.

Threshold
The two thresholds determince the point in highlights and lowlights where the Pos or Neg trim is at its maximum.

Flush
The manual Flush control should be used where a flush is needed, but where the event cannot be set as a Scene change.

User
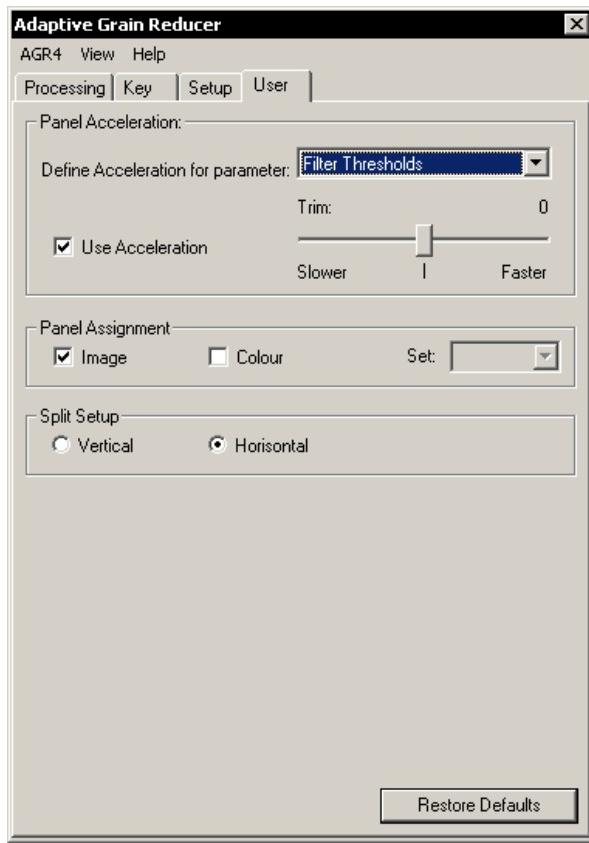
Panel Acceleration

The panel acceleration sets the acceleration/sensitivity of the AGR4 controls provided on the Image panels.

These settings are stored in the User Profile.

Panel Assignment

Valhall Premium+ only.

Determines on which control panels the AGR4 controls are available. The colour panel can also provide differents sets of layouts for the programmable function keys depending on selected option.

Split Setup

The Split Setup determines if the split function should be enabled vertically or horizontally.

18. ASC3, Advanced Scratch Concealment

About Scratch Concealment

ASC3 is Digital Vision's third generation Advanced Scratch & Dirt Concealer aimed primarily for image enhancement and restoration applications.

With pioneering algorithms and new filter technology, the ASC3 offers a break-through in real-time dirt removal providing a cleaner image once only available through non-real-time applications.

The ASC3 comes with several new tools, some previously only available in software, which will help enhance even the most unworkable material.

Controls
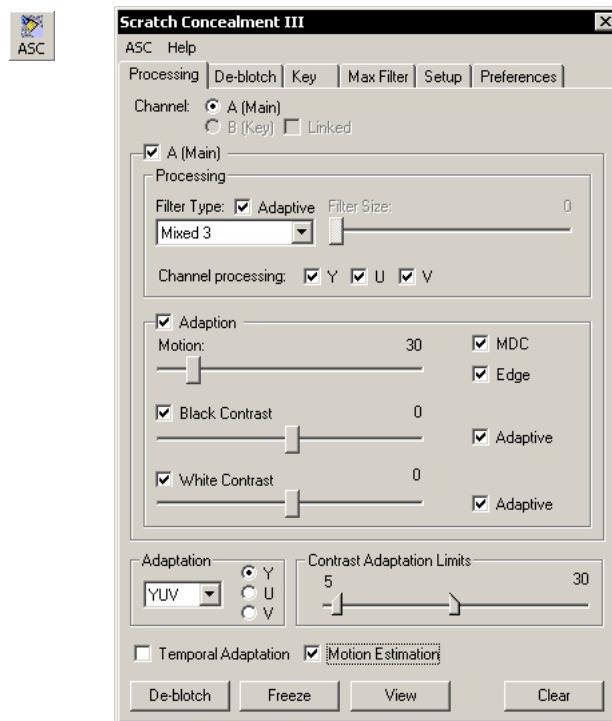
ASC3 window

Set *Origin* in the DVNR set-up window to the correct mode. Video if the material is shot with a video camera. Film *xx* fps if it is shot with a film camera (or if input is directly from a Telecine). The film frame rate it was shot at has to be set too.

⚠ **Note!** The ASC3 does not work as good (if at all) if these settings are not correct.

Processing
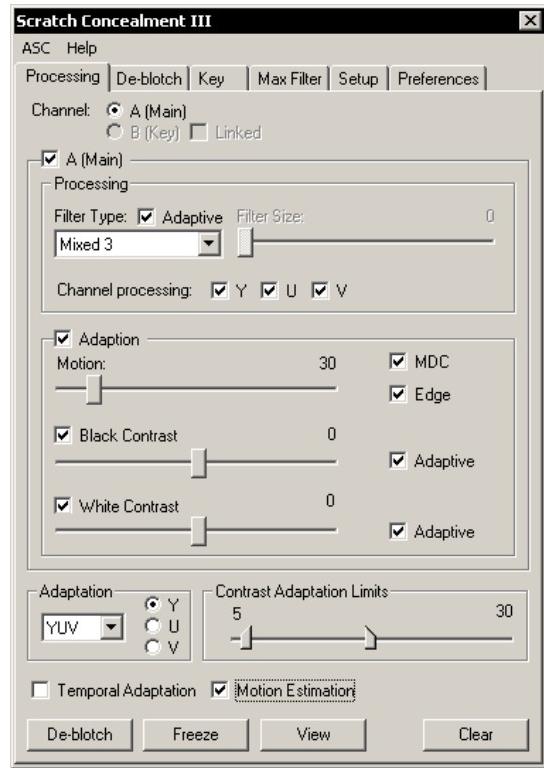
Channel selection

The ASC3 provides dual channel processing inside outside a key defined by an area and/or a chroma key (read more in the Dual Channel Processing – Key section). If a key is not available, only Channel A is available. By selecting the **Linked** checkbox, all changes applied to one channel will be applied to the other.

Tick the checkbox to activate processing.

Processing

Filters

Filter selection depends on your material. The filters have been optimised for video and film separately:

Spatial

All filters named Spat. (Spatial) are filters working only within the current frame (or field if video mode), i.e. it has "taps" only in the current frame. **They are intended for very small spots.**
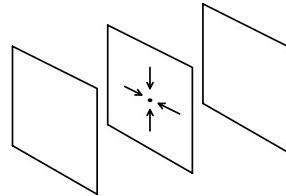
Mix

All filters named Mix have taps in both the current frame and the frame previous to and following the current frame. That is, it has both spatial and temporal taps. All these filters however have more taps in the current frame than in the previous and following frames together (more spatial taps than temporal). **These filters are intended for normal spots.**
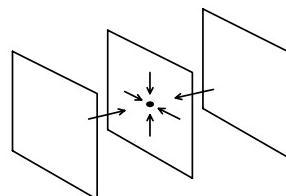
Temporal

Filters called Temporal have both spatial and temporal taps but more temporal than spatial. This will enable the ASC3 to remove any size of spots. These filters may need more care, to not give unwanted artefacts.
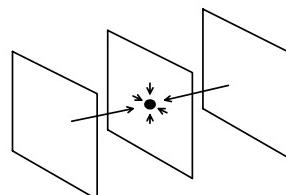
Tip! Filter Temporal 2 is a special temporal filter that uses minimum amount of information from the current frame. This means that the processed signal will not vary as much as the normal temporal filter in terms of luminance/intensity.

Copy

Filters Copy Next and Copy Prev should be used for 1 frame in combination with the Keyer and Global mode to replace a big chunk of dirt, a big hole or a flash frame with information from the next or previous frame.
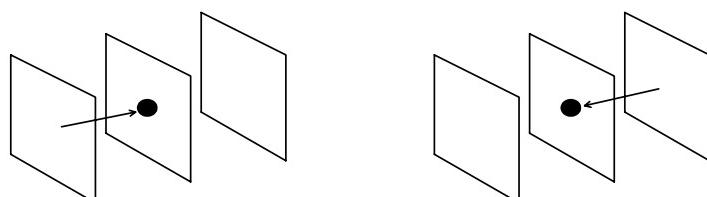
Vertical

The Vertical filter is a special spatial filter with taps only horizontally. It is made specifically to deal with vertical scratches. It can to some extent be used on continuous vertical scratches but should then be used with an area around the scratch and all adaptation turned off (Global). Note! This filter is only available in film mode.

Chroma Flare

The Chroma Flare filter is a special filter working in video mode only. It is typically used for chroma flares/streaks. Note! Channel processing should be set to U & V only.

Adaptive Filter Sizing

One of the big news in the ASC3 is adaptive filter sizing. When enabled, the filter size automatically changes depending on the size of the dirt.

Channel Processing

Normally, the processing should be set to all channels, but in some cases, especially with small dirt, better result can be achieved by processing only one or two of the channels.

Adaptation

Adaptation will only be active if the corresponding checkbox is ticked. If not, the ASC3 works in Global mode, filtering the whole picture or a key area with the same fixed filter, as selected.

Motion

Set **0%** to start with. This is NOT equal to no filtering. It is equal to maximum motion sensitivity. If you think there is not enough filtering in moving parts of the picture, then increase "Motion" in steps. Motion set to 100% = no motion adaptation at all.

Contrast

The Contrast threshold can be set independent for black and white dirt.

Set lower if you have very low contrast white spots on light background or black spots on dark background. Lower if the luminance difference between the spots and the background is less.

or set Contrast to a low value
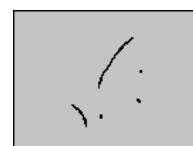
or set Contrast to a high value

Checkbox **Black** is to be selected if there are black spots to be removed and **White** checkbox should be ticked if there are white spots to be removed. Both can be ticked at the same time. If neither is ticked ASC3 will not filter at all!

Adaptive contrast

The contrast can be set to be adaptive. This means that the algorithm itself determines on a pixel-by-pixel basis, which contrast setting is needed.

When enabled the contrast controls are changed to give more or less effect of the adaptive contrast.

Contrast Adaptation limits

The contrast adaptation limits control only works in the adaptive mode and is used to tell which range of contrast settings the adaptation is allowed to work in.

The upper limit is normally set to the non-adaptive contrast setting you normally use. If both limits are set the same, the result is exactly the same as using non-adaptive contrast.

MDC

The MDC (Motion Detection Current) determines whether to look at the previous and next field/frame or the previous, current and next field/frame.

If set to On, this mode ensures higher sensitivity and reduces artefacts down to a minimum.

For maximum filtering, the control may be set to Off.

Edge

Edge protection. Sometimes when you have material with fine structures (e.g. houses from a distance or a forest) and there is a slight weave present, you may see edges being mistakenly detected as scratches. If you the tick the box **Edge**, the built in edge detector will affect were ASC3 filters. It will reduce filtering were it finds edges. Edge should normally be On.

Adaptation

The adaptation works on one channel only, normally Y. By e.g. setting R when only red scratches are visible, the ASC3 will more precisely detect the dirt, minimizing the risk of processing true picture content.

Temporal Adaptation

When enabled, excludes falsely detected dirt from processing by comparing with the previous frame's detected dirt within a sizable window.

The Temporal Adaptation is set up on the Setup page.

Motion Estimation

When enabled, the optional Motion Estimation (ME) module gives a performance boost, both in dirt detection and concealment.

De-blotch

The de-blotcher is a tool once only available in software applications. By placing a cursor on the image, the de-blotcher removes bigger blotches. By clicking on the de-blotcher button, a "de-blotcher session" is started. Read more in the De-blotcher section further on.

Note! The effects of the De-blotcher while working on a still image can only be seen when in Freeze mode.

Freeze

Freezes the current three frames in the pipeline of ASC3 and allows adjustment of parameters on a freezed frame.

Note! Freeze should only be activated when in playspeed.

View

Provides an overlay/preview showing where the ASC3 detects dirt. Type of overlay can be set on the Preferences page with the View Mode control.

Clear

Sets all controls on the Processing page to default.

De-blotcher
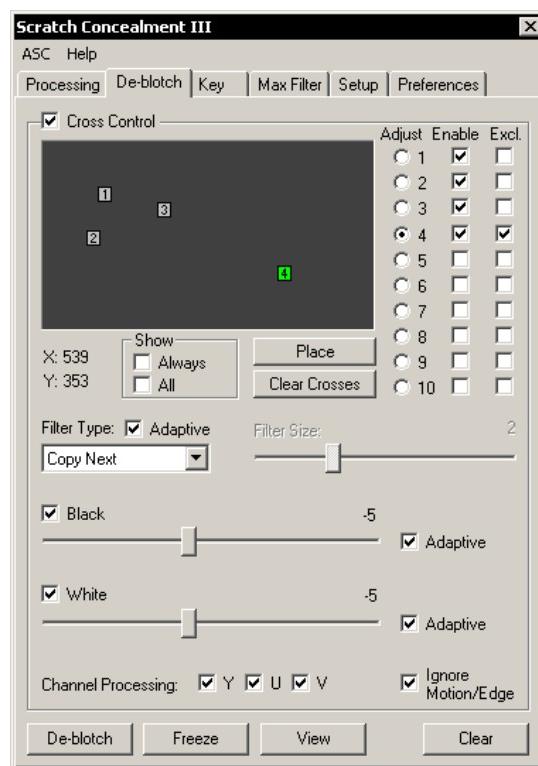
The de-blotcher is a tool once only available in software applications. By placing a cursor on the image, the de-blotcher removes bigger blotches (Include from processing).

The de-blotcher can also be used to protect objects from being processed (Exclude from processing). In Exclude mode, the cursor will have a hyphen (-) in the upper left corner.

Note! The De-blotcher requires timecode control.

Note! The effects of the De-blotcher while working on a still image can only be seen when in Freeze mode.

The de-blotcher overrides A/B channel processing.

Using the De-blotcher

- Park the machine at the frame where the blotch is.

- Click on the De-blotch button in the ASC3 window (or press a function key programmed with De-blotch, found in the DVNR group).

At this point, the source machine does a pre-roll, the picture is frozen at the point where the De-blotch was initialized and a frame event is created.

Operation using a normal mouse

- When the cursor appears, click on the left-mouse button to place de-blotch cursor (next one is available immediately)

- To toggle between include and exclude, keep the <ctrl> key of the keyboard pressed and click the left mouse button

- When finished placing, click the right mouse button

Operation using the Image panel trackball

- When the cursor appears, click on the "left mouse" button (second from the right) to place de-blotch cursor (next one is available immediately)

- To toggle between include and exclude, click the "middle" mouse button (third from the right)

- When finished placing, click the "right" mouse button (first from the right)

Note! The de-blotch cursor should be placed below the upper edge of the blotch and positioned so that as much as possible of the blotch is removed. In some cases more than one cursor needs to be placed to completely remove a blotch.

Leaving the de-blotch mode

If "Auto-clear Freeze when VTR leaves Stop" has been enabled on the Preferences page of the ASC3 window, Freeze is automatically removed when the VTR is played. If not, Freeze has to be removed manually.

Continuing de-blotching after finishing placing

If the VTR still is in stop and freeze is enabled, click on the Place button to continue, otherwise follow the procedures above and the de-blotch function will use next available cursor.

Adjusting placed cursors

- Park the machine at the frame where the blotch is.

- Click on the De-blotch button in the ASC3 window (or press a function key programmed with De-blotch, found in the DVNR group).
- Select the cursor to continue with (adjust). If necessary click on the Place button. Follow the procedures above on operation

Tip! Normally use a temporal or a copy filter for the de-blotcher

Dual Channel Processing - Key
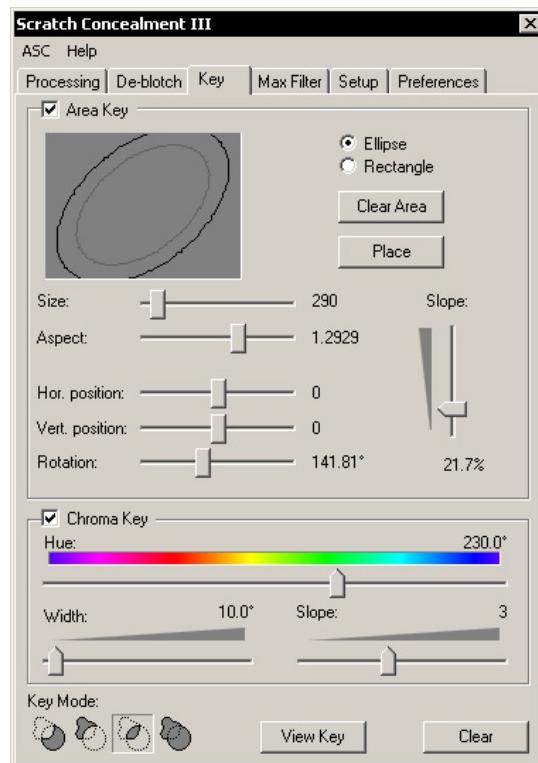
The ASC3 provides dual channel processing inside outside a key defined by an area and/or a chroma key.

Viper Area key

The Viper area key is identical to the area key of AGR4 and ACP.

You have two different "channels" to set parameters in. They are called A (Main Area) and B (Key Area). Use the key area for very special problems like very big single spots or flash frames at film cuts.

Chroma Key

The chroma key is defined by hue, width and slope (soft edge).

Key mode

When both the Viper area key and the chroma key are enabled, these two keys can be combined in a number of different ways. The following combinations are available:

- Combine
- Intersect
- Minus Chroma
- Minus Area

Max Filter
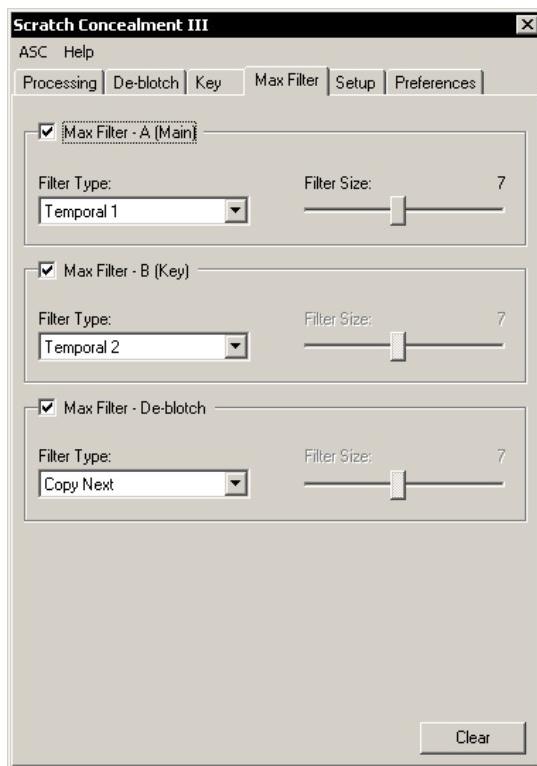
In addition to the filter selected on the Processing tab, a separate Max filter can be enabled. This is very useful when you have material with small dirt and some occasional bigger stains.

Normally, when detecting big stains, the adaptive filter sizing chooses the biggest possible size for the normal filter type selected.

When the Max filter is enabled, the normal filter used for the adaptive filter sizing takes care of the small dirt, but when reaching the upper size limit, automatically switches over to another filter (determined by the user), typically a larger temporal filter.

The Max filter can also be set to bypass, leaving big stains unprocessed, to be processed later by the de-blotcher or 3rd party software.

Setup - Expert Mode
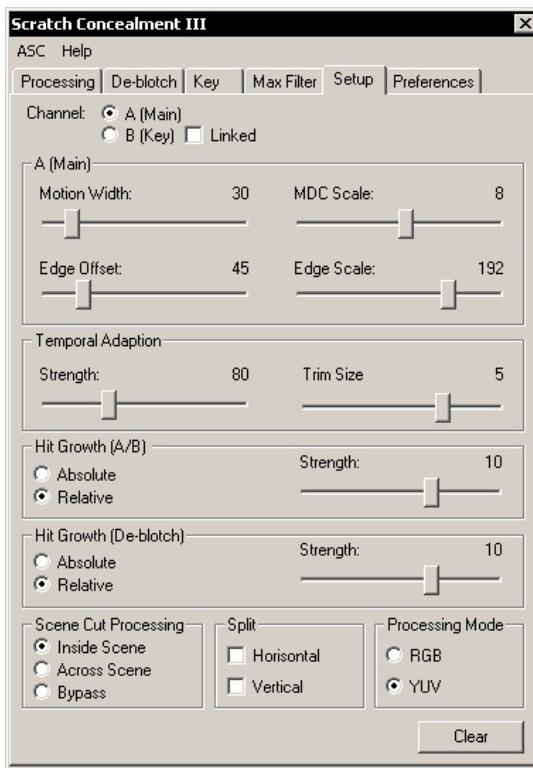
Most of the controls on the Setup (or Expert) page are used to optimize the processing further.

These controls should only be used by experienced operators with a good understanding of the dirt & scratch concealment process.

Motion Width
Motion Width is used in combination with the Motion control on the Processing tab to define the motion adaptation behaviour. When Motion Width is set to 0 the Motion setting will be used as a threshold discriminating between moving and non-moving parts. When set to a non-zero value the classification will change gradually from "no motion" to "full motion". Motion Width then specifies the size of the transition region.

MDC Scale
The higher the setting, the more filtering (less effect of the MDC algorithm).

Only active if the MDC control on the first page has been enabled.

Edge Offset
The Edge offset is like a threshold determining when, or how well-defined the edges have to be before, the Edge control has any effect.

The smaller the value, the earlier the Edge control will have an effect.

Edge Scale
Edge scale sets the sensitivity of the Edge control. The higher the setting, the more pronounced is the effect of the Edge control.

Scene Cut Processing

Inside Scene   Process the frame before a cut, only using the current and previous frame. Process the frame after a cut only using the current and next frame.

Across Scene   Ignore cuts, use previous, current and next (this is how the ASC2 works).

Bypass   Don't process the frames before/after a cut.

⚠ **Note!** The scene cut processing will only work if there are events in the list (e.g. after importing an EDL or building a list with Autoshot). At a first pass using Autoshot, the processing will not work.

Temporal Adaptation

The purpose of the temporal adaptation is to exclude falsely detected dirt from processing by comparing with the previous frame's detected dirt within a sizable window.

The temporal adaptation is enabled on the Processing page.

Strength

Strength determines the amount of influence the previous frames detected dirt will have on exclusion of dirt detection in the current frame. A higher value means less processing since more dirt will be excluded.

Trim Size

The trim size corresponds to a window in the previous frame where dirt is searched. The smaller the window (trim size) is, the more filtering is achieved.

Hit Growth

The hit growth control is useful when there is dirt with not so well-defined edges. By increasing the scratch growth, the processor is told that the dirt is bigger than it actually appears. The result is that the soft edges also are processed.

Mode

In absolute mode the hit mask for all sizes of scratches are grown by the same amount as specified with the Strength control. In Relative mode large scratches causes a larger growth.

Strength

Specifies the amount of hit mask growth. A higher value means that a larger area around the scratch will be processed.

Split

Horisontal

Demonstration mode where the upper half of the picture is processed while the lower part is left unprocessed for comparisons.

Vertical

Demonstration mode where the left part of the picture is processed while the right part is left unprocessed for comparisons.

Processing Mode

The ASC3 processing can operate in either YUV or RGB mode. This can be set independently of the operating mode for the adaptation logic, see Processing - Adaptation above. Within a selected mode, processing of individual channels can be disabled using the controls on the Processing tab.

Preferences
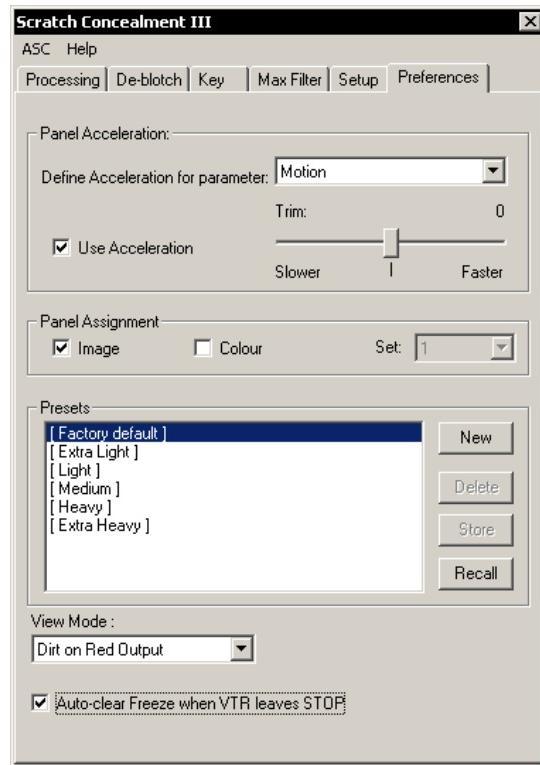
Panel Acceleration

The panel acceleration sets the acceleration/sensitivity of the ASC3 controls provided on the Image panels.

These settings are stored in the User Profile.

Panel Assignment

Valhall Premium+ only.

Determines on which control panels the ASC3 controls are available. The colour panel can also provide different sets of layouts for the programmable function keys depending on selected option.

Presets

The ASC3 dialogue provides the possibility to store presets for the commonly settings to be reused in other projects. These presets are available at all times and for all users.

View Mode

A selection of different overlays of which one can be activated by the View key on the Processing page. The following view modes are available:

Dirt on Luma	The detected scratches/dirt are highlighted on a monochrome input picture with lowered luminance.
Dirt on Red Input	The detected scratches/dirt are shown with red on the unprocessed input signal.
Dirt on Red Output	The detected scratches/dirt are shown with red on the processed output signal.
Difference (Processed)	The difference between the unprocessed input and the processed output is displayed.

Auto-clear Freeze when VTR leaves Stop

When enabled, removes Freeze when leaving Stop (typically the VTR is placed in play mode) after a de-blotch session. Applicable when using the programmable function TC Freeze.

19. CSR, Vertical Scratch Removal

About Continuous Scratch Removal

The CSR continuous vertical film-scratch remover effectively removes disturbing effects of vertical film scratches. Even pure emulsion damages can effectively be dealt with and CSR processing can be done both tape-to-tape as well as directly in the telecine transfer process.

The proprietary and patented process is fully adaptive and allows for fast and effective concealment by the use of advanced digital filtering techniques. Due to the adaptive nature of the process, only areas suffering from scratches will be processed leaving the remaining part of the image unaffected.

User control allows for adjustment to select maximum processed size, length and relative inter-frame movement. The CSR offers very cost effective restoration of damaged film and largely avoids the use of manual paintwork.

Theory of Operation

CSR contains a scratch detector and a median filter. The scratch detector enables the median filter only in the part or part of the picture where scratches are detected, to remove the scratches. The rest of the picture is left unprocessed.

CSR also includes the Area Isolation feature. The user can select in which areas of the picture processing is allowed. This eliminates the risk of CSR removing objects that the scratch detector mistakes for being scratches e.g. flag staffs.

The CSR can be set to Global mode, where the scratch detector is disabled. Instead, the user manually controls the amount of median filtering. This mode is useful in difficult situations, where the scratch detector cannot detect the scratches. Area isolation works in Global mode as well, allowing the user to only process the parts of the picture where there are scratches.

Controls
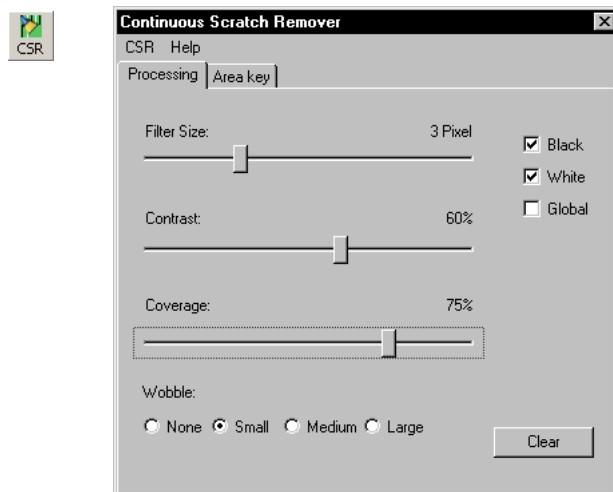
CSR window

Scratch Detector Controls

The user has a number of controls to describe the scratch to the scratch detector. All of the criteria have to be fulfilled at the same time in order to detect the scratch. The scratch detector controls are only available in non-Global mode.
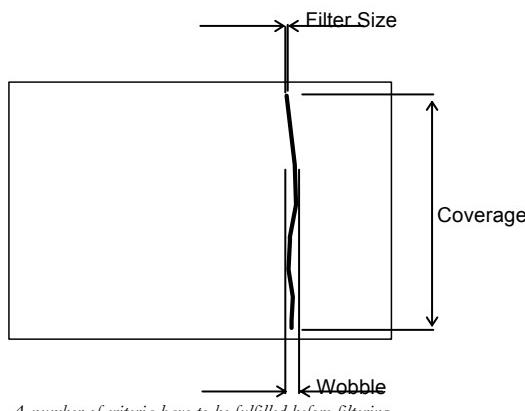
A number of criteria have to be fulfilled before filtering

Black
Attenuation of Black scratches.

White
Attenuation of White scratches.

White and Black can be selected at the same time.

Filter Size
Corresponds to the width of the scratch(es) in pixels. E.g. a setting of 5 pixels will remove any scratch equal to or smaller than 5 pixels.

Contrast
Selects the threshold/sensitivity for the detection of scratches. If the contrast between scratches and picture information is high, set the Contrast control to a low value to minimise processing of "real" picture information. On the other hand, if the contrast between scratches and

picture information is low, set the contrast to a high value, to enable processing of the scratches.

Coverage

Coverage is the length of the scratch compared to the active picture. E.g. setting Coverage to 60% removes scratches equal to or larger than 60% of the active picture.

Wobble

Selects how much the scratch(es) are allowed to move horizontally and still being detected by the CSR:

- None
- Small
- Medium
- Large

Global Mode Controls

Global

Selects the Global filtering mode. In this mode, the scratch detector is disabled.

Filter Size

Optimises the median filter for a particular scratch width. For example, Filter Size 5 removes scratches that are 5 pixels wide or less.

Level

Sets the amount of global filtering.
When Level is 0%, the picture is left unprocessed.
When Level is 100%, maximum filtering is performed.

Area Key
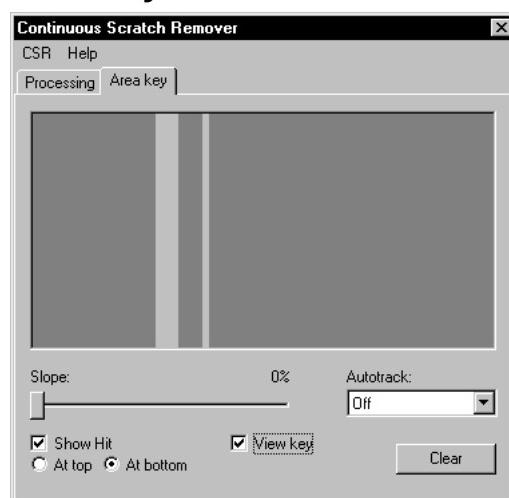
This feature lets the user select in which part or parts of the picture, where processing is allowed. In non-Global mode, this eliminates the risk of the CSR removing objects that the scratch detector mistakes for scratches. In Global mode, the whole of the selected areas is processed.

Click the CSR window. A vertical stripe will appear in the video picture. The stripe can be moved using the mouse/trackball.

Select the area or areas in the video picture that contain unwanted vertical scratches by clicking and dragging using the left mouse/trackball button.

If you click and drag on an area that is already selected, it becomes deselected.

When you have finished selecting areas, press the right mouse/trackball button.

Note! It is important to select a key area that is just large enough to cover all picture areas that contain the scratch during a scene.

Autotrack

The Autotrack feature automatically moves or deselects selected areas if a scratch moves or disappears. Autotrack is useful only in a few situations. It should normally bet set to *Off*.

Off	No action
Deactivate	This function deselects areas where no scratches are detected. This is useful for deselecting areas when a scratch disappears, e.g. after a scene change. If a new object that the scratch detector may mistake for a scratch appears in the same position later, it is not processed since the area is not selected anymore.
Widen	Widens the selected area if a scratch tends to move out of the selected area.
Follow	Moves selected areas, letting them follow a moving scratch.

In most cases, however, setting Autotrack to Off and manually selecting areas that are wide enough for the scratch movement, is good enough.

Miscellaneous Controls

Slope
At Slope setting 0, the horizontal median filtering cuts in and out directly. Higher settings of Slope cause the filtering to gradually increase and decrease around edges of the detected scratch. This removes some of the ringing, which normally appears on the sides of a high contrast scratch. The slope also gives a good result when using global filtering and area isolation.

Show hit
Click on **Show hit At bottom** or **At top** in the CSR window. A status display bar appears in the picture as shown below:

Status Bar

Area Key
Scratch Length
Filter Activated
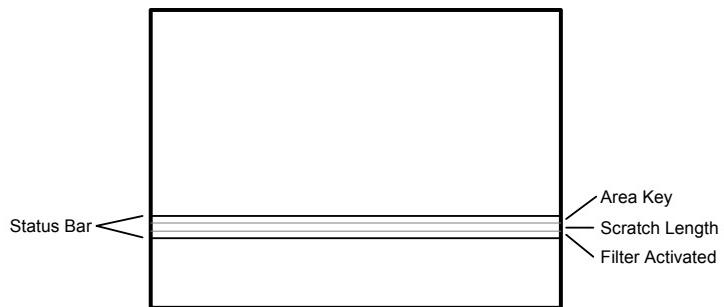
The Status Bar

The Status Bar helps you to optimise the CSR settings. It contains three fields:

- The Area Key (top) field shows the selected area key.

- The Scratch Length (middle) field displays the scratch length using a grey scale. The field shows the effect of the following controls: Black, White, Contrast, Filter Size and Wobble.

- The Filter (bottom) field indicates where the median filter is activated. In non-Global mode, this field shows the effect of the Coverage and Slope controls. In Global mode, it shows the effect of the Level and Slope controls.

Note! If the lower field of the status bar shows no activity, the CSR is not being triggered by any scratches within the key area.

Setup
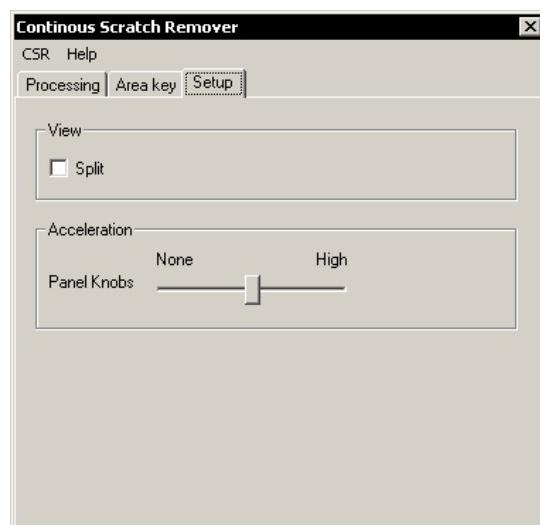
Split

Demonstration mode where the upper half of the picture is processed while the lower part is left unprocessed for comparisons.

Panel Acceleration

The panel acceleration sets the acceleration/sensitivity of the AGR4 controls provided on the Image panels.

These settings are stored in the User Profile.

Operation

General

The following approach can be used to optimise the CSR settings:

1. Select **non-Global** mode and **Autotrack Off**.

2. Set **Area Key** where the scratch or scratches are.

3. Activate the **Status Bar**.
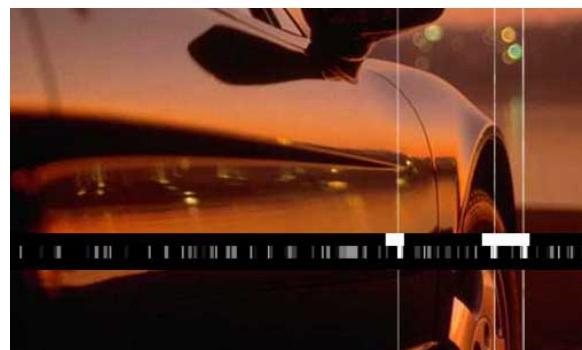
4. Set **Black** and/or **White** depending on the scratch type.

5. Set **Coverage**, **Contrast**, **Filter Size** and **Wobble** to maximum.

6. Adjust **Contrast**, while looking at the Scratch Length (middle) field in the Status Bar. Try to make the Scratch Length field as bright as possible where the scratches are, while keeping it as dark as possible elsewhere.
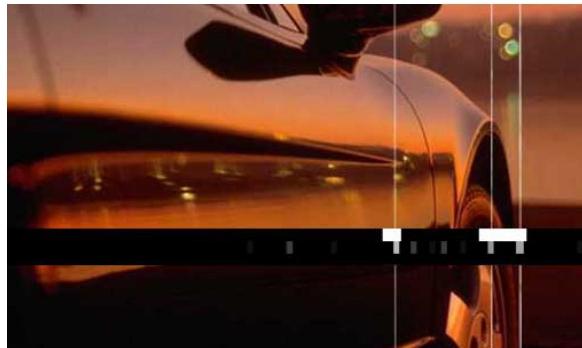
7. Lower **Coverage** until the scratch disappears. Look at the Filter (bottom) field in the **Status Bar**.
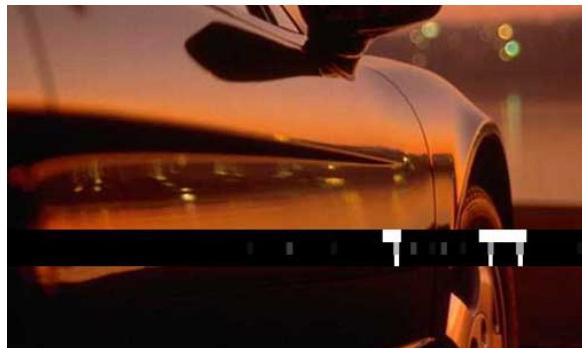
8. Lower **Filter Size** until the scratch reappears. Go back one step on the **Filter Size** control.

9. Check if lower settings of *Wobble* can be used.

10. If too much filtering is applied to the rest of the picture, try fine tuning **Contrast** and **Filter Size**.

11. If the scratch detector has difficulties detecting the scratches, try **Global** mode and adjust **Level**.

12. Try out different **Slope** settings.

Tip! When applying CSR filtering, try to increase Noise Reduction slightly so that the effect of the CSR filtering is not so apparent.

20. ACP 2.0, Advanced Colour Processor

About ACP
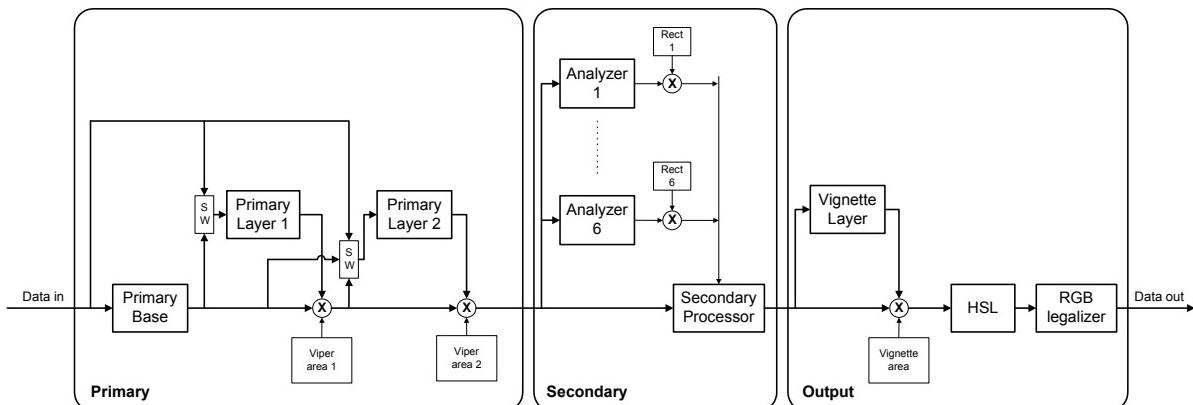
ACP is Digital Vision's third generation Colour Corrector aimed primarily for advanced tape-to-tape colour correction. For the demanding jobs, additional primary colour corrector layers with Viper keying provides a power boost. The ACP, together with the closely integrated Valhall control system, has been developed together with some of the most experienced colourists in the business.

Primary Colour Corrector

The internal signal processing of the primary colour corrector is structured around four channels, one luminance path and three chrominance paths, each one processed with the same bandwidth. The primary can be configured for use of all 4 paths (Y+RGB) or 3 paths (RGB). The use of Y+RGB paths allow luminance gain and black changes to be made without affecting or needing to realign colour balance. Inversely, when grading colour, the luminance level remains constant. Further, the internal processing has been designed so that no truncation errors are introduced in the processing chain. This is especially important for certain parameters like gamma correction in order to avoid any stepwise action of the curve. The ACP also features

user definable transfer functions and thresholds for black, gamma and gain control, which are useful when perfect match in the primary colour correction stage is required. For even greater flexibility, precise control and creative effects, separate Curves for YRGB are available.

Two additional layers of primary colour correction including Viper keying are available. Each of these layers can process the output of the previous layer, the base layer or the original picture.

Advanced Viper Keying

The advanced Viper keying, is used to isolate areas in the picture for the two additional primary colour corrector layers. The user interface has been designed to provide both speed of operation as well as a high level of control over the key area. This has been accomplished by assigning controls on the Valhall Colour Corrector panel for parameters such as position and shape and at the same time providing accurate control with the mouse pointer. All area shape manipulation uses the video monitor as the primary display for the key area. The Viper provides the colourist with the choice of one out of two key shapes: rectangle or ellipse that can be positioned, resized and rotated. Adjustable soft edge, with the choice of different profiles, is also provided.

Secondary Colour Corrector

The secondary colour processor offers six functionally parallel channels/vectors with independent discrimination and processing in the Hue, Saturation and Luminance domains. Each vector has its own key area in the shape of a rectangle to provide additional isolation.

Output Processing

After Primary and Secondary colour processing, a final output processing stage is available including a Vignette layer, an RGB legalizer with adjustable levels as well as Hue, Saturation and Luminance controls.

Primary Controls
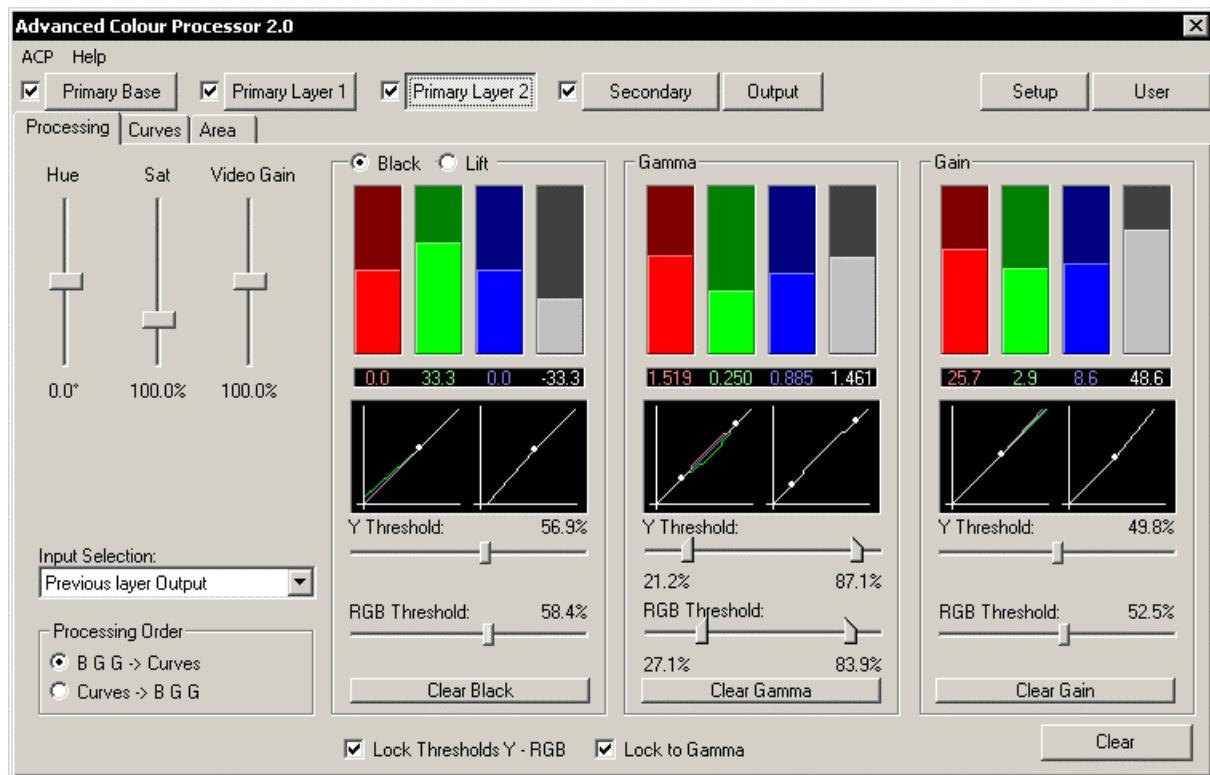
Primary processing "Standard view"
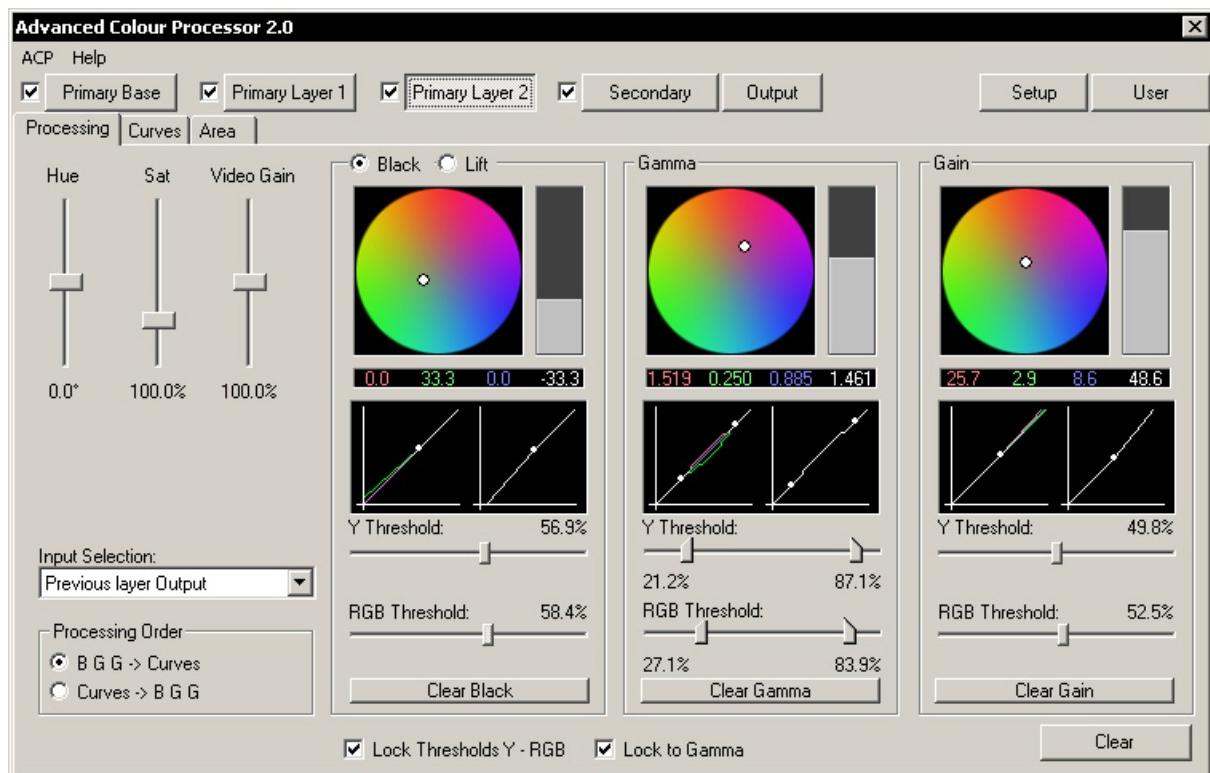
Primary processing "Classic view"

Click on the ACP button at the top of the workspace or select ACP from the Image panel to access the ACP controls.

To switch between the two views as shown above, go to menu View > Primary or right-click on the RGB controls.

To access primary controls from the control panel, press the "A" key by the display.

Primary mode

The ACP colour processor provides YRGB paths in the primary.

In the **YRGB** mode the luma level is separately controllable in addition to the RGB controls. I.e. luma level is not affected by changes in RGB balance and vice versa. Additionally the Master Rings on the Colour panel can be configured to control Y only, RGB or Y+RGB. This is set-up in the Setup page of the ACP window.

In the **RGB** mode, luminance is extracted from the resulting RGB changes and the Master rings on the Colour panel affects RGB simultaneously.

RGB or YRGB mode can be set-up in the ACP preferences page under Primary mode as described further on.

In all Master ring configurations, except Y only, all YRGB controls will stop when one of them hits minimum or maximum value.

Input Selection

The Input Selection control determine from where the selected layer gets it input from:

Original Input	The layer get its input unprocessed by previous layers
Base Layer Output	The layer get its input from the output of the Base Layer
Previous Layer Output	Layer 2 get its input from the output of the Layer 1

Processing Order

Determines the sequential processing order of Curves and Black/Gamma/Gain/Lift/Video Gain controls.

Black-Gamma-Gain > Curves	This is the preferred mode when Curves are to be used as a creative effect.
Curves > Black-Gamma-Gain	This is the preferred mode if Curves are to be used as a set-up to correct e.g. camera imbalances, typically in the Base layer.

Hue

Controls the colour tone (chroma phase) by rotating the phase of the colour circle. Range is -180 to +180 degrees.

Saturation

Increases or decreases the chrominance level. The possible gain is in the range 0% - 400%.

Video Gain

In addition to the Gain and Saturation controls, a separate Video Gain control is available.

Black

Adjusts dark parts of the picture: slider for luminance adjustments, trackball for red, green and blue individually. Range: -100% - +100% of the full video amplitude.

On the Colour panel use leftmost trackball for RGB settings and corresponding ring for luminance setting.

Gamma

Adjusts grey parts of the picture: slider for luminance adjustments, trackball for red, green and blue individually. Range: 0.25 – 4.00 (Normally set to 1.00).

On the Colour panel use middle trackball for RGB settings and corresponding ring for luminance setting.

Gain

Adjusts light parts of the picture: slider for luminance adjustments, trackball for red, green and blue. Range: -100% - +100%.

On the Colour panel use rightmost trackball for RGB settings and corresponding ring for luminance setting.

Lift

The Lift control adds the change independent of original luma level just like a "set-up". Similar operation for RGB.
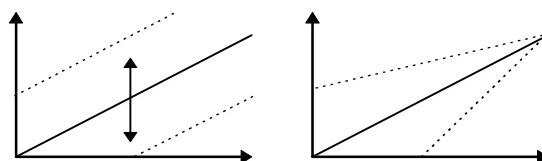
The effect of Lift (to the left) compared to Black on a Luminance ramp

Clear all

Clears all parameters found in the Primary Colour Correction window when activated.

Master & RGB Thresholds

With the threshold controls it is possible to set from which point in the grey scale up to white Gain should work or from which point in the grey scale down to black the Black control should work as shown below. Gamma has two thresholds.

Similarly, thresholds can be set for RGB controls.
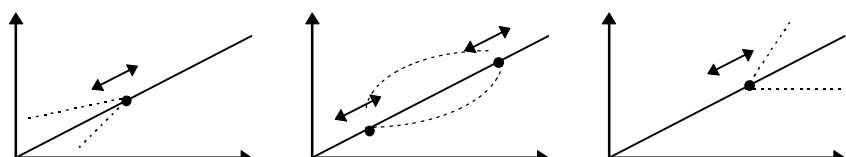
The thresholds can be set directly in the diagram by left-clicking. Right-click to set Gamma upper threshold.

Lock Thresholds Y - RGB

Enabling this control locks the relative position of Y and RGB thresholds to each other.

Lock to Gamma

Enabling this control locks the relative position of the Black threshold to the Gamma lower threshold as well as the Gain threshold to the Gamma upper threshold.

Curves
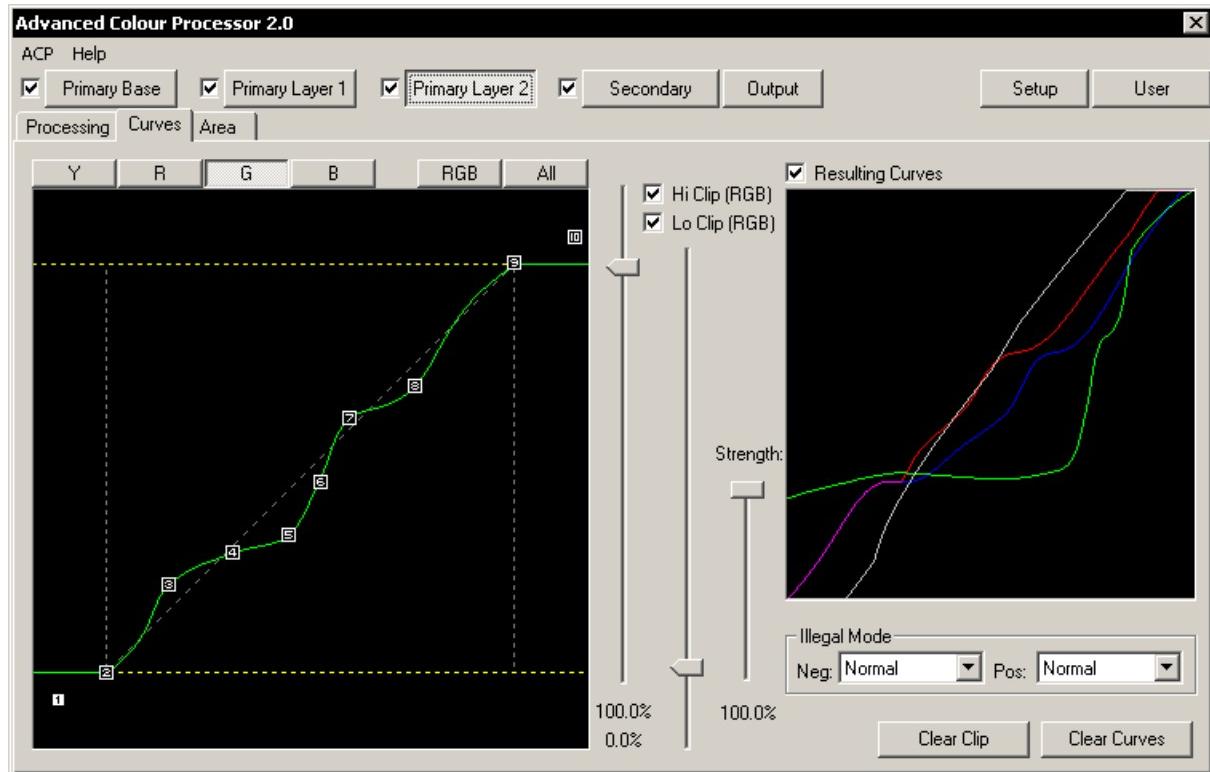
The Curves feature provides user definable gamma-like controls (transfer function). Curves can be used to define black stretch, soft white clip, solarization and posterizing or other artistical effects. They can also be used to apply a "film look", or to correct for faded color emulsions.

Different curves can be applied to Y, R, G and B.

The curves can be applied before or after the Black, Gamma and Gain controls.

Curves are programmable in the list on a frame-by-frame basis.

Up to 6 points can be added for each curve making a total of 10 points affecting the curve.

The bottom of the graph represents black and the top represents white (similar to a waveform display). However, the curve has no relationship with the source image. Instead it shows the effect of the curves on a linear ramp. If a curve is set to a straight line from lower left to upper right (the shape of a linear ramp), the curve has no effect on the selected channel(s).

The points are represented by squares with numbers. The active point (the one which can be adjusted from keyboard or panels) has a white (filled) square.

The dotted inner square represents the legal RGB range and the horizontal yellow dotted lines represent upper and lower clip levels as described further on.

The right graph shows YRGB simultaneously, but does not allow editing of the curves. By enabling Resulting Curves, the combined result of Black/Gamma/Gain, Curves and Strength are shown.
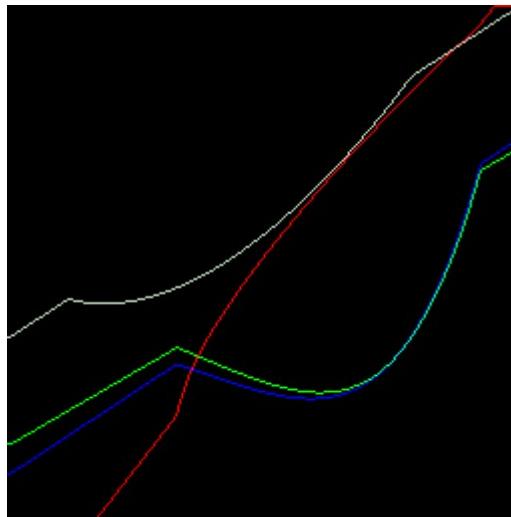
Black, Gamma Gain only
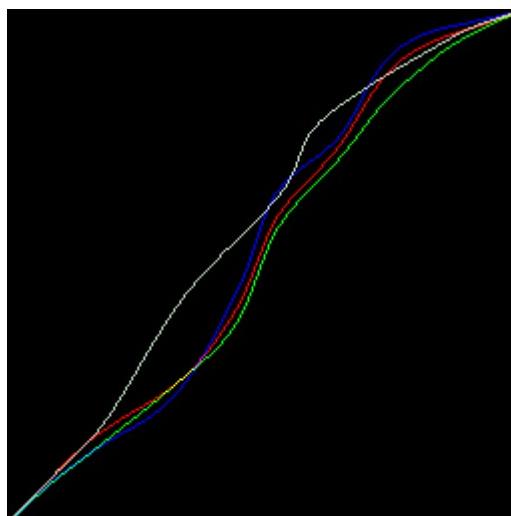
Curves only
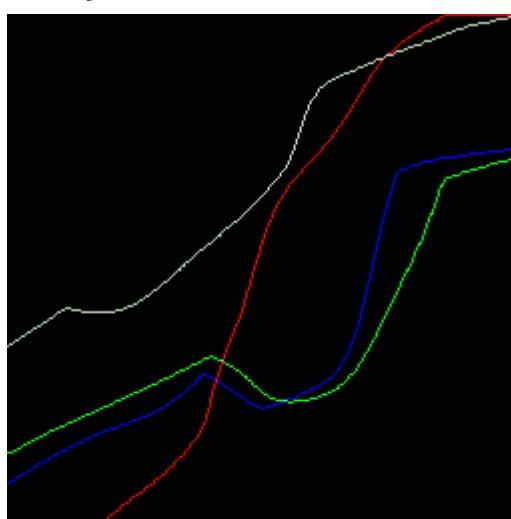
Black, Gamma Gain and Curves combined

Adding a Point

In the graph, either double-click or left-click while holding the <shift> key on the keyboard pressed to add a new point.

While the graph is in focus, press <+> or <space> on the keyboard.

From the Image or Colour panel, press the Add button above the displays (first select Curves).

Selecting a point

Left-click on a point in the graph to select it.

While the graph is in focus, press one of the numerical keys to select a specific point.

From the Image or Colour panel, rotate the leftmost knob below the display (first select Curves) to select a specific point.

Moving a Point

Left-click and drag in the graph to move a point.

While the graph is in focus, use the arrow keys to position the selected point. Keep the <shift> key pressed while using the arrow keys to move the point in larger steps.

From the Image or Colour panel, adjust position by using the X and Y knobs below the display(s) to move the selected point.

## Deleting a Point

Right-click on a point in the graph to delete it.

While the graph is in focus, press <-> or <del> on the keyboard.

From the Image or Colour panel, press the Delete button above the displays (first select Curves) to delete the selected point.

Clearing Curves

Curves can be cleared (set to unity) independently or all together by right-clicking on the corresponding selection button (Y, R, G, B, RGB or All) and selecting Clear from the pop-up menu. All Curves (YRGB) on the selected layer can also be cleared simultaneously by pressing the Clear Curves button at the bottom of the dialogue.
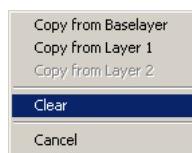
Copying Curves

Curves can copied from another layer independently or all together by right-clicking on the corresponding selection button (Y, R, G, B, RGB or All) and selecting Copy and the specific layer from the pop-up menu.

```
Copy from Baselayer
Copy from Layer 1
Copy from Layer 2

Clear

Cancel
```
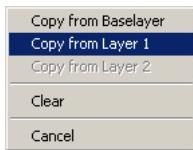
Adjustable Clip

Independent upper and lower clip separately for Y and RGB. Can be used for legal clipping or for artistical effects.

To access Y clips, click on the Y button. To access RGB clips, click on the R, G or B button.

Misc. controls

Strength

Strength can be used individually or all together (Y, R, G, B, RGB or All according to the buttons above the left Curves graph) to lower the effect of the Curves. The left Curves graph always shows the transfer function at 100% strength.

Note! The effect of Strength can only be seen when "Resulting Curves" has been enabled

Illegal mode

Determines how the combined result of Black-Gamma-Gain and Curves will be clipped in the illegal range. Separate controls are provided for Positive and Negative range.

Normal	No effect on the illegal ranges
Linear	Sets the illegal ranges to unity, i.e. to linear transfer functions
Zero clipped	Clips all negative values to 0

Clear Clip

When pressed, clears all clips (Y and RGB) on the selected layer.

Clear Curves

When pressed, clears all curves (Y and RGB) on the selected layer.

Viper keying
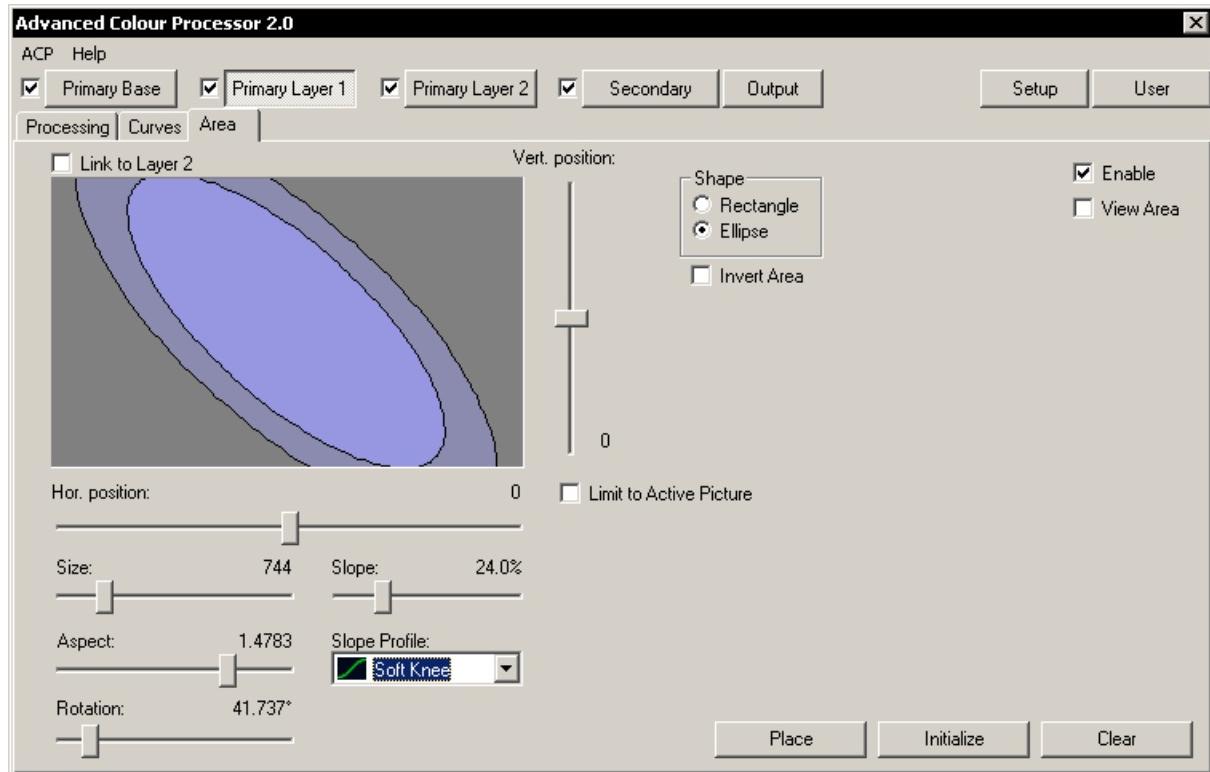
Area

For the demanding jobs, the Viper area key can be activated on the primary layers providing isolation of primary processing. The Viper area isolation includes two basic key shapes (rectangle or ellipse) to choose from with full control of size, aspect, rotation and positioning.

To access area controls from the control panel, ensure the "Area" key is selected.

Click on **Initialize** and place the key area, then select type of shape, **rectangle** or **ellipse**.

The colour correction is applied inside the blue area, as shown in the GUI, of the area key. The adjustable **Slope** (the area between the black and the grey line) provides soft transitions between the input picture and the processed picture.

Colour correction can be applied outside the area by enabling the **Invert Area** control.

To see the area key on the video monitor while adjusting the controls, check **View key**.
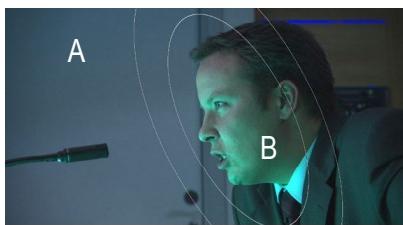
Viper key area activated in Layer 1

Changes applied on Layer 1 (area inverted)

Slope Profiles

A selection of 4 different profiles is available:

- Linear
- Soft knee (linear in the centre but with soft knees)
- S-curve soft
- S-curve sharp

The S-curves are more suited for smaller slopes and the linear ones are more suited for larger slopes.

Positioning the Area Key

The area key can be positioned in a number of different ways by:

1. Pushing the Place key on the Colour or Image panel and moving the mouse/trackball.
2. Dragging the visible area key with the mouse in the Area window.
3. Using the sliders in the Area window.

Re-sizing or Rotating the Area Key

The area key can be re-sized and rotated in a number of different ways by:

1. Using the controls on the Colour or Image panel.
2. Using the Area Key display in the Area window.
   Re-sizing: Hold the right mouse button and move the cursor
   Rotating: Hold down the left + right mouse buttons and move the cursor.
3. Using the sliders in the Area window.

Linking Area Keys

It is possible to link Area keys to either provide two layers of processing inside (or outside) a key area or different processing inside/outside the area key (by inverting one of the key areas) in addition to the base layer processing.

On one of the layers, activate **Link to Layer _n_** on the Area. Now the area can be adjusted from any of the linked layers and the other one will always follow.

When layer key areas are linked, the graphical representation of the key area will change from blue to red.

Secondary Controls
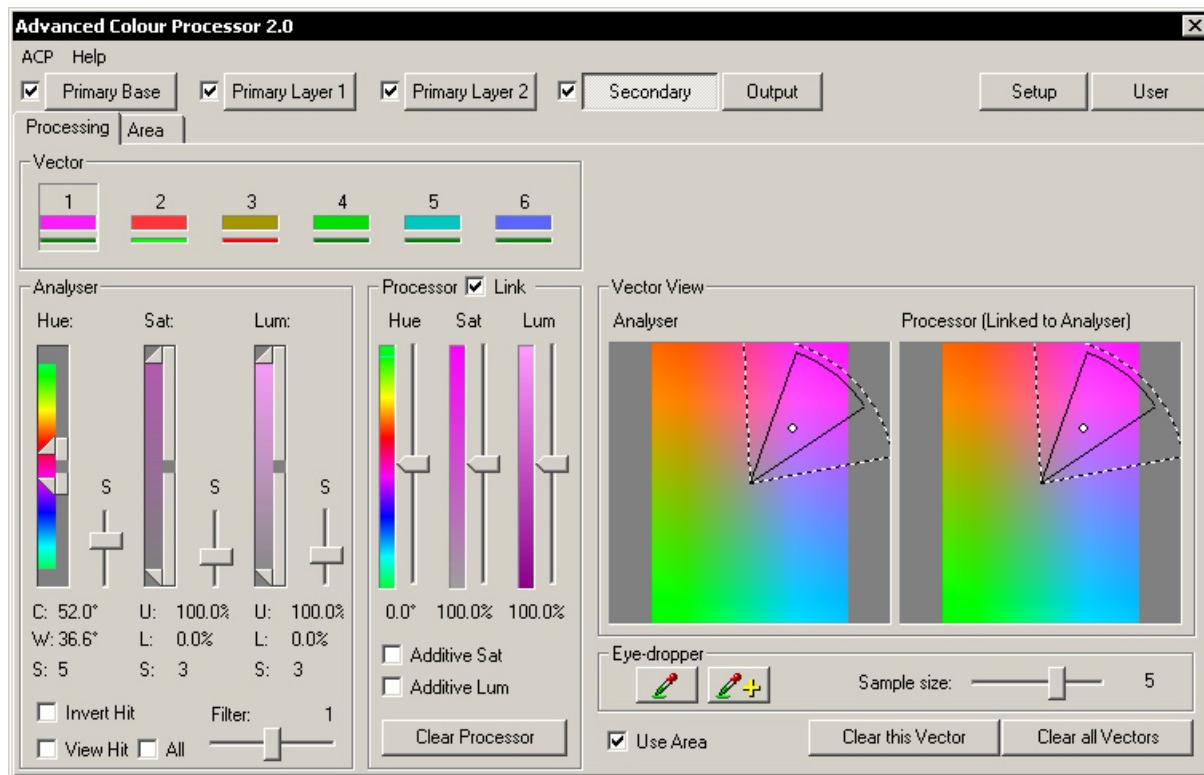
The Secondary Colour Corrector is divided into two parts:

The **Analyzer** and the **Processor**. With the Analyzer you search for a colour to change and with the Processor, you change it.

Click on the ACP button at the top of the workspace or select ACP from the Image panel to access the ACP controls.

To access secondary controls from the control panel, press the "B" key by the display.

Analyzer

The Analyzer is the part of the Secondary that detects colours in the picture for the Processor to work with. It has 6 independent vectors to work with.

Vector select

Click one of the six coloured buttons to select the vector you want to work with. The vectors default to magenta, red, yellow, green, cyan and blue.

The colour of the button will change depending on how you set the analyzer.

Below each vector select button, there is a small indicator or "LED". The indicators will light up in green to indicate vectors in use and red when bypassed.

When clicking in the Show All checkbox, the colour display will show the location of all six vectors.

Tip! To copy settings from one vector to another, right-click on the vector selection button for the target vector and choose the vector to copy from in the pop-up menu.

Centre (C)
Sets the centre-point of the selected control (Hue/Sat/Lum) and vector.

Width (W)
Sets the width/range of selected control and Vector.

The picture below shows the effect of the central point and width on Hue and Saturation of a vector:
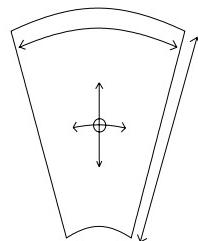
Analyzer GUI controls
In addition to controlling Centre and Width, the slider used for the analyzer also provides upper/lower limit controls for quicker isolations.
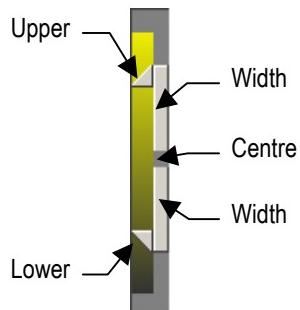
Note that for the Hue control, which is used exactly like the Saturation and Luminance controls, the colour wheel moves and the slider always remains centred.

Slope (S)
Defines the slope (soft edge) of the selected control and vector.
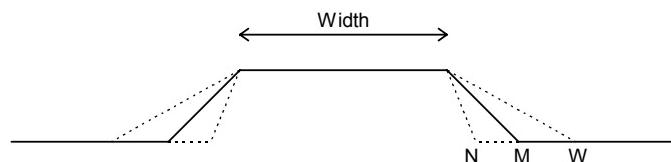
The different slopes: Narrow, Medium and Wide

Eye-dropper

Instead of setting the centre-points manually, you can use the Eyedropper button. Click on it and a cursor will appear on the video monitor. To discard, click on the right mouse or trackball button. To accept, click on the left one and centre-points for the selected vector will automatically be set.

The sample area of the eyedropper can be set to 1x1, 3x3, 5x5 or 7x7 pixels with the **Sample size** control.
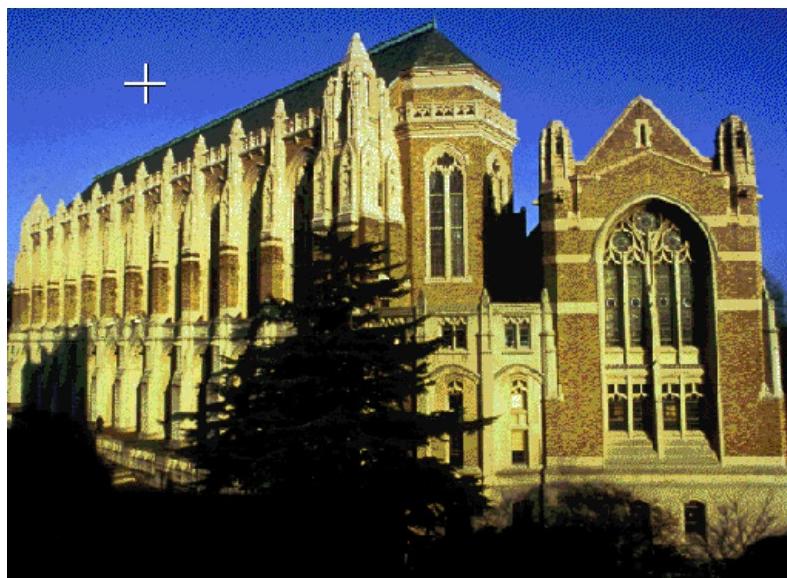
Cursor on video monitor when Eye-dropper is selected

Tip! The Eye-dropper tolerance can be set on the User page.

Eye-dropper +

By clicking on adjacent areas to the "hit area", the "width" will be enlarged and will include these colours in the "hit area" as well.

View Hit

When activated, a mask will show the parts of the picture affected by the secondary in the selected channel.

How the hit signal is displayed can be changed in the View Analyser Mode on the setup page of the ACP window.

All

By activating All, the View Hit will show all vectors at the same time for the selected channel.

Filter

A filter can be enabled to reduce the effects noise can have on the analyzer.

Processor

The Processor is the part of Secondary that performs the changes of the picture content as follows:

Hue
Sets the chroma phase for the selected channel. Range is -180 to +180 degrees.

Sat
Amplifies or attenuates the chrominance of the selected channel.

Lum
Amplifies or attenuates the luminance for the selected channel.

Additive Luminance
Adds instead of multiplies the selected value to the luma level.

Additive Saturation
Activate the Additive Saturation for colouring of areas with low saturation and where the resulting colour needs to be highly saturated.
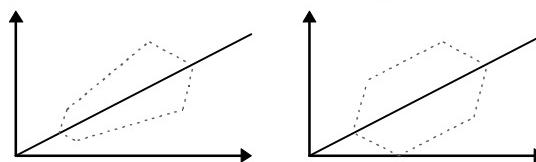
Multiplicative to the left and Additive to the right (incl. slopes) affecting a luma or chroma ramp

Clear This
Clears both Analyzer and Processor settings for the selected vector.

Clear all
Clears Processor settings Hue, Saturation and Luminance for all vectors and sets default values for the Analyzer.

Invert hit
By selecting invert hit, the selected colour is excluded from processing and the other parts of the picture are processed.

This can typically be used to make the whole picture monochrome (turning down saturation to 0%) with the exception of the selected colour.

Use area
A key area can be enabled for each vector to further isolate the hit. Read more in the Area section further on.

Link
Normally, the Processor follows the Analyser and the adjustments in the Processor will start from the original colour selected in the Analyser.

If Link is deselected, it is possible to start with the colour that the original one should be turned in to. I.e. setting the processor to the colour blue, will cause an object to turn to blue when selected with the eye-dropper.

To e.g. match colours of an object between two shots, first set up an vector with the colour from the first shot (e.g. using the eye-dropper),

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enable Unlink Processor and then click on the colour in the second shot and the colour from the first shot will be applied.

Operation

Original picture

Selecting colour in the analyzer using the eye-dropper

View Hit – Highlight
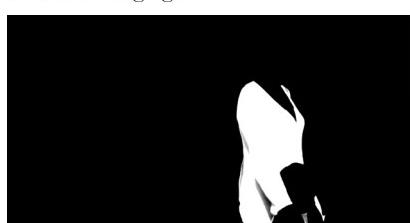
View Hit – White/Black

Final result

Area
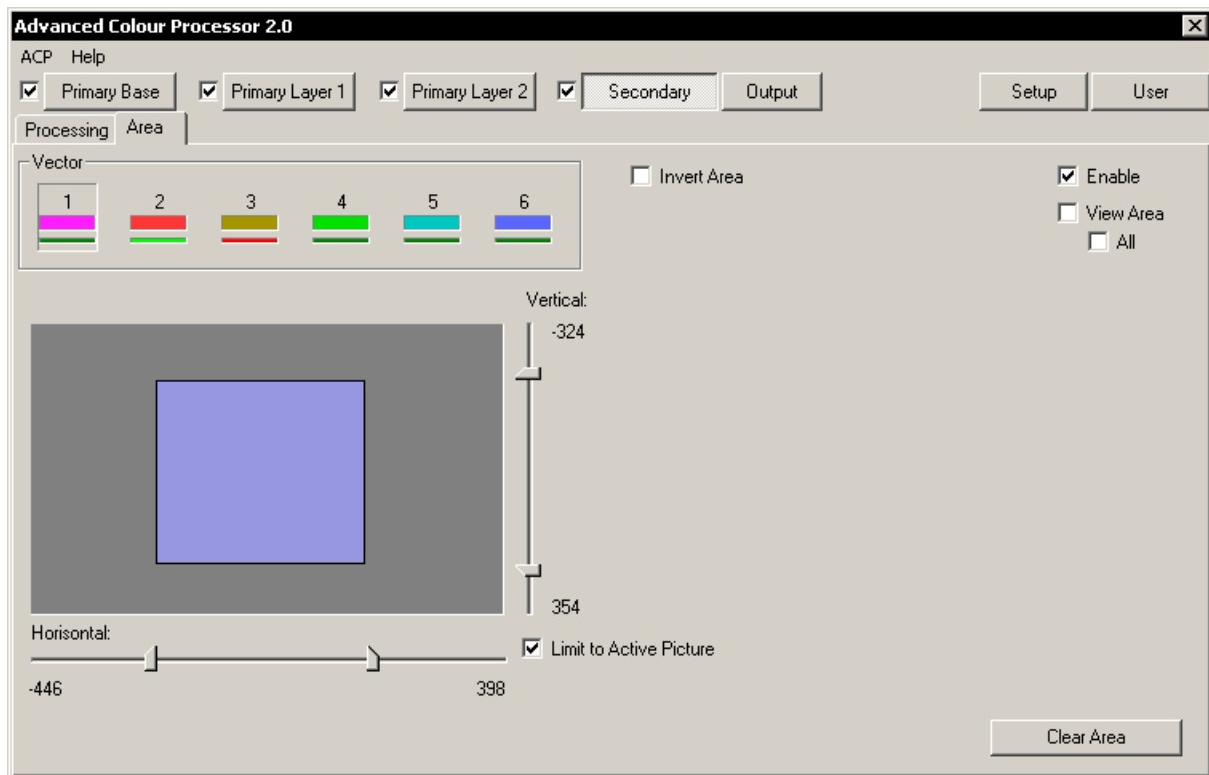
Each vector has its own key area in the shape of a rectangle to provide additional isolation of the hit. The area is enabled with the checkbox Use Area on the Processing tab of the Secondary.

To access secondary area controls from the control panel, ensure the "B" key is selected and the press the "3" key.

Invert Area
When enabled, inverts the area (hits only outside of area).

View Area
Enable to display the outline of the current area.

All
When All and View Area both are selected, the outline of active areas are displayed

Limit to Active Picture
By enabling Limit to Active Picture, the area cannot be moved beyond the active picture.

Tip! The control panels provide additional controls to re-size the area. Ensure Secondary is active ("B" key) and Area controls are chosen ("3" key). Press the button labelled "Size" to access Size and Position controls on the knobs below.

Positioning the Area Key

The area key can be positioned in two different ways by:

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1. Pushing the Place key on the Colour or Image panel and moving the mouse/trackball.

2. Dragging the visible area key with the mouse in the Area window.

Output
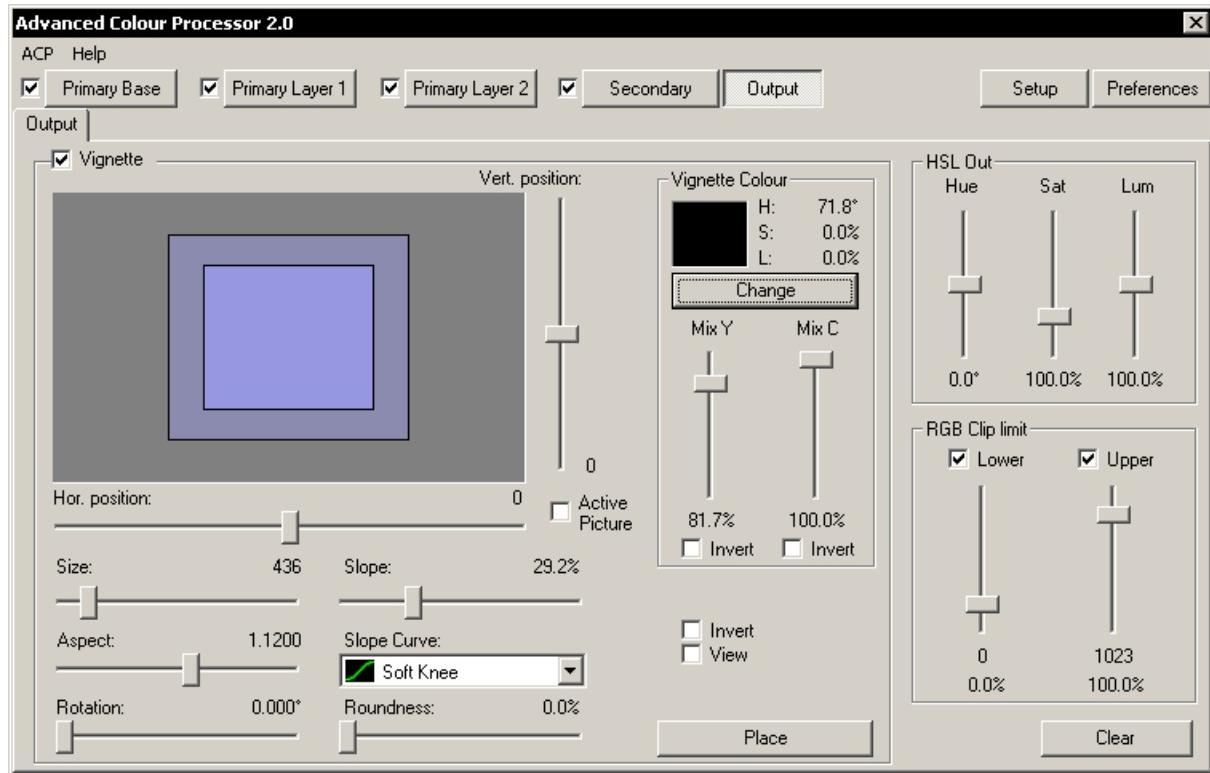
The output processing provides additional controls post of the Secondary.

Vignette

The Vignette layer is used to create vignettes and to simulate other optical effects. The vignette layer uses HSL controls to define the vignette colour in combination with a mix control for setting the transparency.

Vignette Colour

Click on the Change button to set the Vignette Colour.
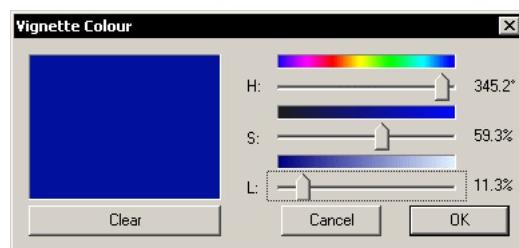
Mix Level

The Mix Level affects the opacity of the Vignette colour. 0% is the same as fully transparent and 100% full Vignette colour.

Invert

Normally, the Vignette colour is only applied inside or outside the Vignette area leaving one part of the picture unaffected.

The Invert control enables full Vignette colour (opaque) inside or outside the Vignette area while the other part of the picture can be affected with the specified amount (Mix Level) of Vignette colour.

HSL

The HSL group of controls consists of Hue (-180 to +180 degrees), Saturation (0% to 400%) and Luminance (0% to 200%) controls.

Clips

Additional separate Upper and Lower RGB clips are available. 0% and 100% corresponds to analogue (min black and max white) levels.

Note! If lower RGB clips are enabled and adjusted to higher values, hi levels of RGB could be affected in order to preserve Hue.

Setup
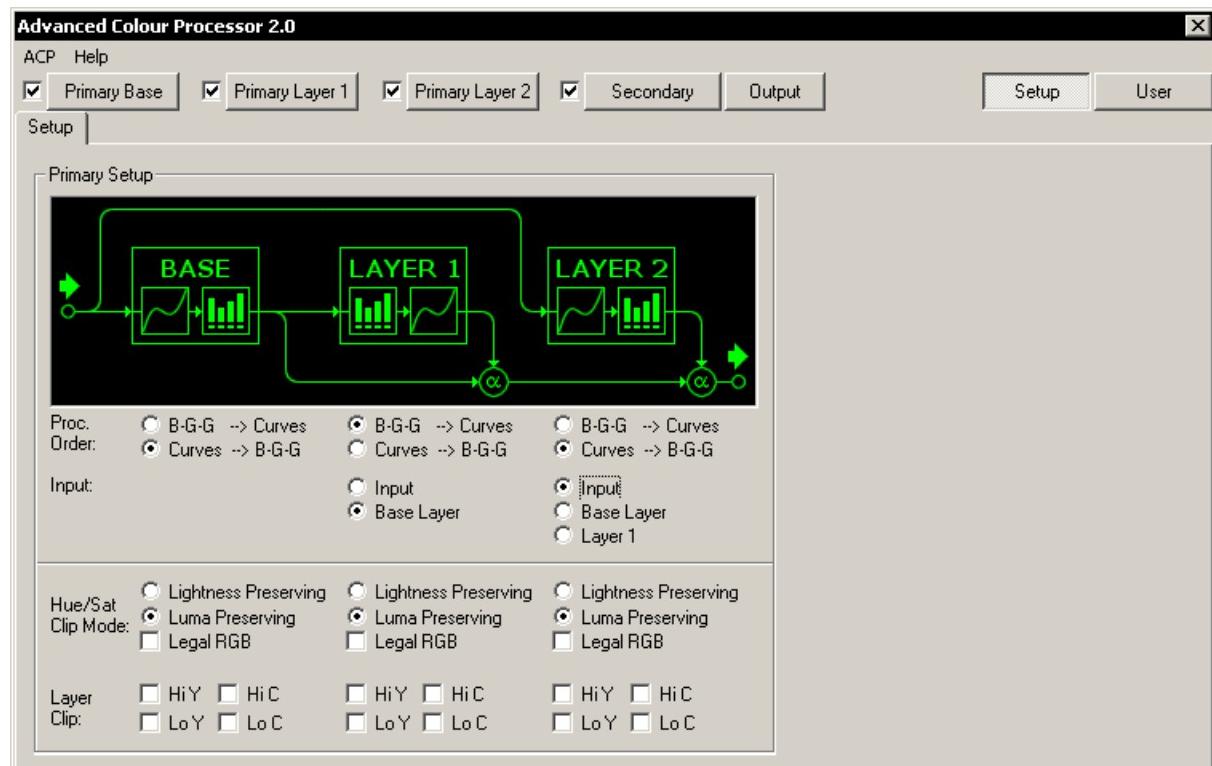
The setup page provides a comprehensive view of the primary routing and clips. Most controls are also available on respective layer.

Proc. Order

Determines the sequential processing order of Curves and Black/Gamma/Gain/Lift/Video Gain controls.

Black-Gamma-Gain > Curves	This is the preferred mode when Curves are to be used as a creative effect.
Curves > Black-Gamma-Gain	This is the preferred mode if Curves are to be used as a set-up to correct e.g. camera imbalances, typically in the Base layer.

This control is found on the Processing tab of each primary layer.

Input

The Input Selection control determine from where each layer gets it input from:

Original Input	The layer get its input unprocessed by previous layers
Base Layer Output	The layer get its input from the output of the Base Layer
Previous Layer Output	Layer 2 get its input from the output of the Layer 1

These controls are found on the Processing tab on primary layer 1 and layer 2.

Hue/Sat Clip Mode

Determines the colour space in which Hue and Saturation should be applied, either HSY (Y=Luminance) or HSL (L=Lightness). Luminance and Lightness are two commonly used but different ways of representing the brightness in the picture.

Legal RGB

Determines whether the output from the Hue and Saturation processing should be legalized in the RGB colour space or not before being passed on to Black/Gamma/Gain and Curves processing.

Layer Clip

Enables independent upper and lower clip separately for Y and RGB. Can be used for legal clipping or for artistical effects.

All controls are found on the Curves tab on each primary layers.

User
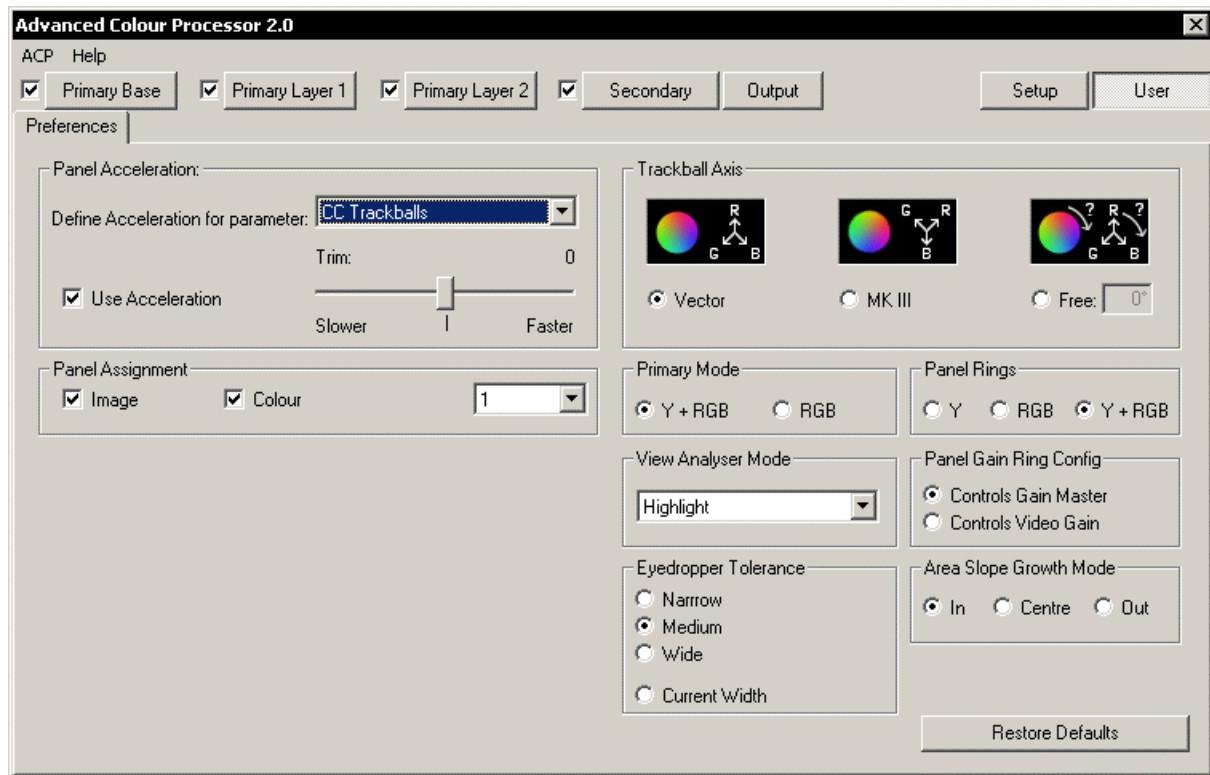
Panel Acceleration

The panel acceleration sets the acceleration/sensitivity of the ACP controls provided on the Colour and Image panels.

These settings are stored in the User Profile.

Trackball Axis

The Trackball Axis setting makes it possible to change the axis/orientation of the RGB trackballs on the Colour panel.

Vector Vectorscope mode. Default setting

MK III Rotates the axis to match a Rank MK III joystick

Free Free rotate between 0-360º

Primary Mode

The ACP colour processor provides YRGB paths in the primary.

In the **YRGB** mode luma level is separately controllable in addition to the RGB controls. I.e. luma level is not affected by changes in RGB balance and vice versa. Additionally the Master Rings on the Colour panel can be configured to control Y only, RGB or Y+RGB. This is set-up under Panel Rings.

In the **RGB** mode, luminance is extracted from the resulting RGB changes and the Master rings on the Colour panel affects RGB simultaneously.

Panel Rings

When YRGB has been selected as Primary Mode described above, it is possible to control Y, RGB or Y+RGB with the rings for Master Black, Gamma and Gain.

When controlling RGB or Y+RGB from the rings, Black Y, Gamma Y and Gain Y are available on knobs under the display.

When controlling Y from the rings, Black RGB, Gamma RGB and Gain RGB are available on knobs.

Panel Gain Ring Config

The rightmost ring on the Colour panel normally controls Master Gain as determined by "Primary Mode" and "Panel Rings" settings. To use the ring to control Video Gain instead, select "Controls Video Gain".

View Analyser Mode

View Analyser Mode determines how the hit signal is displayed. The hit signal is activated with the View Hit control on the Secondary page.

Eyedropper Tolerance

The Eyedropper Tolerance sets up HSL widths of the analyzer when using the eye-dropper. When set to Current Width, whatever the HSL widths were set to will be used.

Slope Growth

The Slope Growth control determines how the slope grows/behaves when adjusted.

Note! All items except Primary Mode is stored in the User Profile and not in the list.

ACP Menu

Unity	▶
Copy Layer	▶
Swap Layer	▶
Clear Layer	
Clear	
Bypass	

Unity

The definable unity is used for every Clear button.

To recall unity, select Unity > Recall. To store unity, select Unity > Store.

To load factory defaults, select Unity > Factory Default. To store the factory default as unity, select Unity > Store.

Copy Layer

Copies all settings (including processing, curves, clips, areas) from one layer to the currently selected one.

Also available in a pop-up menu when right-clicking on a layer button.

Swap Layer

Swaps all settings (including processing, curves, clips, areas) between one layer and the currently selected one.

Also available in a pop-up menu when right-clicking on a layer button.

Clear Layer

Clear all settings (including processing, curves, clips, areas) on the selected layer.

Also available in a pop-up menu when right-clicking on a layer button.

Bypass

When enabled, both Primary and Secondary is put into electronic bypass.

Clear

Clears both Primary and Secondary settings.

Operation

Creating a Vignette

1. Set your over-all processing on the base layer

2. Optionally use Primary layer 1 for additional processing

3. On Primary layer 2 Processing tab, select Input Selection > Previous Layer Output

4. On Primary layer 2 Area tab, deselect Normal

5. Select Invert area and if necessary View Area

6. Select Ellipse and adjust size, aspect, slope and position parameters

7. Go to the Processing tab and adjust your processing to create the vignette, typically by setting Video Gain to 0%

8. If necessary, go back to the Processing tab

Different Processing Inside/Outside of a Key Area

With overall settings on Primary base

1. Adjust overall processing with Base Primary

2. Adjust outside processing with Base Primary

3. On Primary Layer 1 Area tab, deselect Normal

4. Select Invert and Link to Layer 2

5. Select View Area and set up the area

6. On Primary Layer 1 Processing tab, set Input Selection to Base Primary

7. Adjust outside processing with Primary Layer 1

8. On Primary Layer 2 Processing tab, set Input Selection to Base Primary

9. Adjust inside processing with Primary Layer 1 tab

Without overall settings on Primary base

1. Adjust outside processing with Base Primary

2. On Primary Layer 1 Area tab, deselect Normal

3. Select View Area and set up the area

4. On Primary Layer 1 Processing tab, set Input Selection to Base Primary

5. Adjust inside processing with Primary Layer 1

Cascaded Processing

1. On Primary Layer 1 Processing tab, ensure Input Selection is set to Base Primary

2. On Primary Layer 2 Processing tab, ensure Input Selection is set to Previous Layer Output

One colour and the rest Monochrome

1. On the secondary page, select e.g. vector 1 and pick out the colour to remain in the picture using the eye-dropper

2. If necessary, adjust HSL width in the analyzer

3. Adjust the selected colour using the processor if needed

4. Select e.g. vector 2

5. Right-click on the vector 2 button and select Copy settings from Vector 1

6. Set Saturation in the Processor to 0%

21. CD, Colour Desaturation

About Colour Desaturation

The CD option, colour desaturation is the process of removing or decreasing colour saturation below and above an adjustable luminance level. This process greatly simplifies certain types of telecine work where considerable effort would be required by the use of conventional colour correction techniques in order to correct severe colour imbalances.

Since desaturation can be made both above and below a preset level, negative and positive film processing is catered for. Similar in appearance to film, errors may occur in the video domain. This is often due to incorrect white balancing or mix of colour temperatures during a shot. Also, cameras that are forced into extreme high and low lights may cause RGB imbalance.

Controls
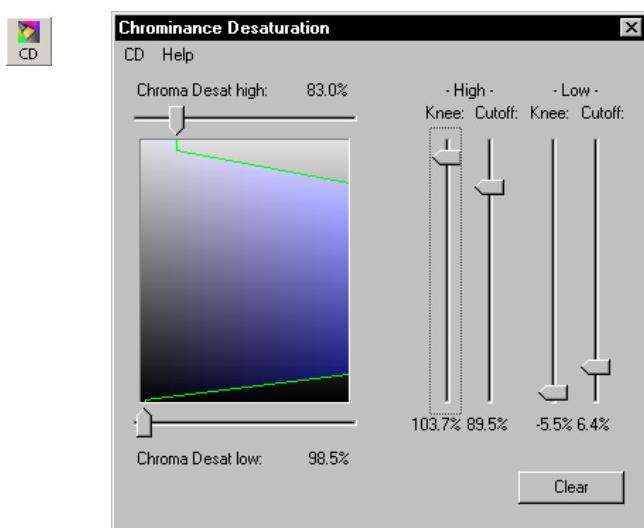
Chroma Desaturation (CD) window.

Cutoff

Sets the luminance level where minimum desaturation, 0%, is performed.

Knee

Sets the luminance level where maximum desaturation (according to desat level) is performed

The desaturation between the 100% threshold and the Desat threshold is a linear function.

Chroma Desat

Sets the amount of Chrominance Desaturation to be performed between the following luminance levels:

- Max. White (Super White) to Desat Threshold High
- Max. Black (Super Black) to Desat Threshold Low

Clear

Clears or sets the Colour Desaturation to its default values.

Panel controls

Page 1 selects lowlight controls.

Page 2 selects highlight controls.

22. AC, Aperture Correction

About Aperture Correction

After all processing, the signal can be further enhanced by a two-dimensional aperture corrector. The aperture processor normally increases response to high frequency content in the signal, thus adding subjective sharpness to the picture. Aperture correction should be employed as the last process in the chain to avoid increase of the overall noise level.

The Aperture Corrector is a standard feature in the DVNR image processing system.

Controls
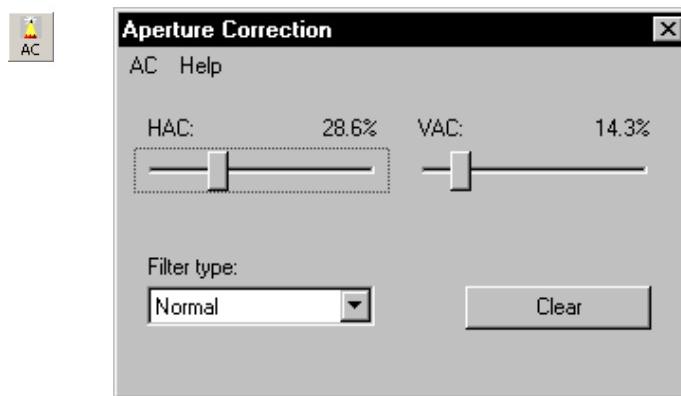
Aperture Correction (AC) window.

Filter Type

Selects one of four possible filters:

Normal	Normal Aperture Correction
Diagonal	More horizontal/vertical than diagonal detail enhancement
Soft	Softens the picture
Extra	Stronger and larger steps than Normal

HAC

Amount of Horizontal Aperture Correction. Range is 0-100% in 8 steps, where 0 is bypass.

VAC

Amount of Vertical Aperture Correction. Range is 0-100% in 8 steps, where 0 is bypass.

23. AAC, Advanced Aperture Correction

About Advanced Aperture Correction

Detail processing for both film and video can be achieved by the AAC, Advanced Aperture Corrector. Typically it will be one of the last processes carried out in the digital video path, post of noise reduction, film dirt concealment, various filtering and the critical non-linear manipulation in the primary and secondary colour corrector.

Several features put the AAC apart from any other type of aperture correction available. Firstly it can operate in either field or frame mode. The latter case addresses film originated material where traditional field based correction is unsuitable.

In addition, provision for independent lift or reduction (softening) of detail in high and lowlights is possible as well as selection of actual detail size by adjustable frequency sweep.

Details may also be selected on basis of colour hue where the user selects a chrominance range to be corrected. This unique function offers the possibility to correct such visibly sensitive areas like human skin but also to process mattes for better keying results.

Controls
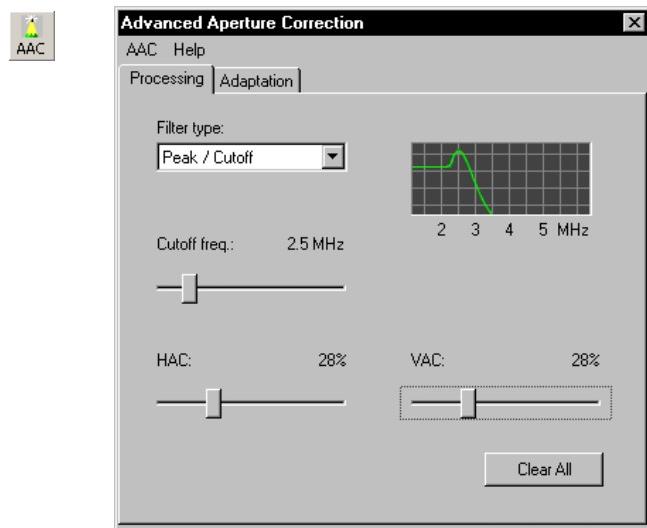
Advanced Aperture Correction (AAC) window.

Field / Frame mode

In the Frame mode, all filtering in the AAC is done with the help of picture information from a frame, consisting of two consecutive fields.

In Field mode, picture information from one field only is used.

Field/Frame mode is selected in the AAC menu.

Filter Type

Selects one of the following filters:

Normal	Normal Aperture Correction
Diagonal	More horizontal/vertical than diagonal detail enhancement (preferred setting)
Soft	Softens the picture
Extra	Stronger and larger steps than Normal
Highboost	Boosts the signal above a selectable frequency
Peak/Cutoff	First Peak then cut-off at selectable frequency
Peak	Peak at selectable frequency
Inverse	Inverts the luminance
Edge	Effects only

Filter Characteristics:

"Highboost" filter

"Peak/Cutoff" filter

"Peak" filter
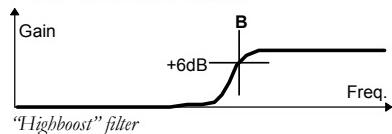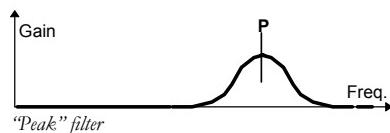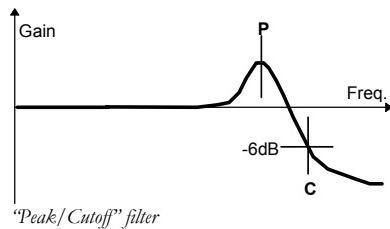
Boost frequency is defined at +6dB (VAC=7/HAC=7).

Cut frequency is defined at -6dB (VAC=7/HAC=7)

The vertical filtering is at the equivalent field-line cut of frequencies.

**Note!** For HDTV, the cutoff frequency displayed should be multiplied by a factor of 5.5

HAC

Amount of Horizontal Aperture Correction. Range is 0-100% in 8 steps, where 0 is bypass.

VAC

Amount of Vertical Aperture Correction. Range is 0-100% in 8 steps, where 0 is bypass.

Adaptation
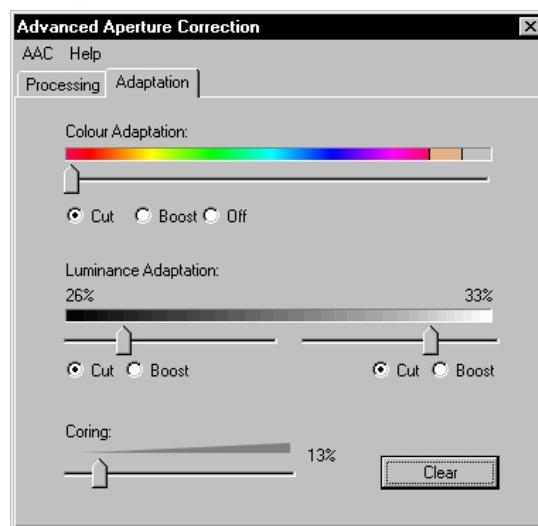
AAC Adaptation

Colour Adaptation

By selecting the Colour control, it is possible to *Cut* or *Boost* Aperture Correction within an area of a specific colour.

The last two colours are **Skin Tone**, specially set for skin tones (where both hue and saturation discriminates selection) and **Monochrome**

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where saturation has to be below a certain (low) value for Cut or Boost of noise reduction in monochrome areas.

Luminance Adaptation

Theses two independent controls determine if a cut or a boost of aperture correction is to be applied to the defined areas in black and/or in white. If the scrollbar is set to 0, the corresponding Cut/Boost control has no effect.

Coring

or edge detection. A low setting will apply aperture correction on most edges while a high setting will restrict aperture correction to high intensity edges.

24. ZOM

About ZOM

The ZOM (Zoom & Aspect Ratio Converter), providing high quality frame based filtering, can be used in many different ways and applications. E.g. Anamorphic processing, Pan-and-scan prior to external down-conversion, Cut-out of down-filtered picture (including Pan-and-scan) provided by external equipment.

The ZOM is together with the Valhall Control System provides frame accurate control including high resolution dynamic changes of scaling and positioning.

Controls
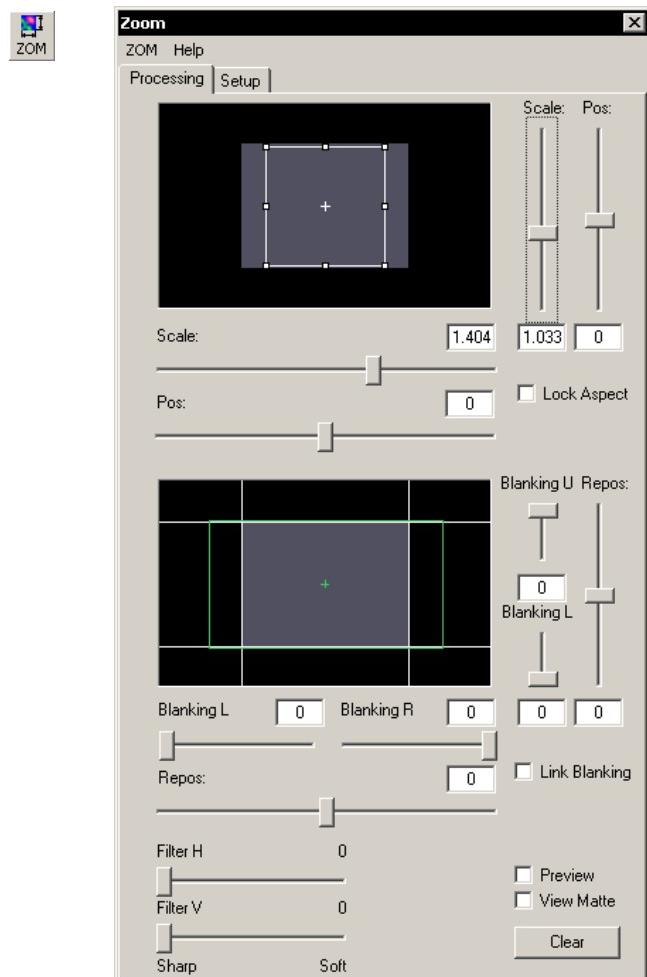
ZOM window

Processing

H/V Scale
Separate Horizontal and Vertical scaling is provided between 0.33 and 2.0.

The two controls can be locked with the Lock control to provide zoom functionality.

H/V Position
Horizontal and Vertical sub-pixel positioning in all aspects (including 1.0) to provide e.g. Pan-and-scan.

H/V Filter Controls
To provide control of sharpness vs alias reduction of the scaled picture, the ZOM provides separate Horizontal and Vertical filter controls in 8 steps.

H/V Repositioning

The ZOM provides independent repositioning controls with 1 pixel resolution so that a downsized picture can be positioned anywhere else on the screen than in the centre.

A typical application is to zoom out the picture and take a SDTV cut-out of the HDTV picture.

Blanking

Separate Upper, Lower, Left and Right Blanking can be added on top of the picture using the same colour as described below.

The Blanking can be locked to the repositioning or remain centred.

In addition, the Blanking colour can be set with RGB or YUV values to provide other colours than black. This can serve as a warning if the picture might have been positioned too far in one of the directions. This is done on the setup tab as described further on.

Bypass

A Bypass control provides a 1:1 output.

Preview


Preview mode   *Final output*

A Preview mode is provided so that the complete input picture can be seen with the cut-out visible as bright magenta lines when zooming in the picture. The re-blanking can be seen as thinner magenta lines.

Note that preview is only available for scale settings greater than 1.

The preview mode can be enabled independently of the list and dynamics.

Setup
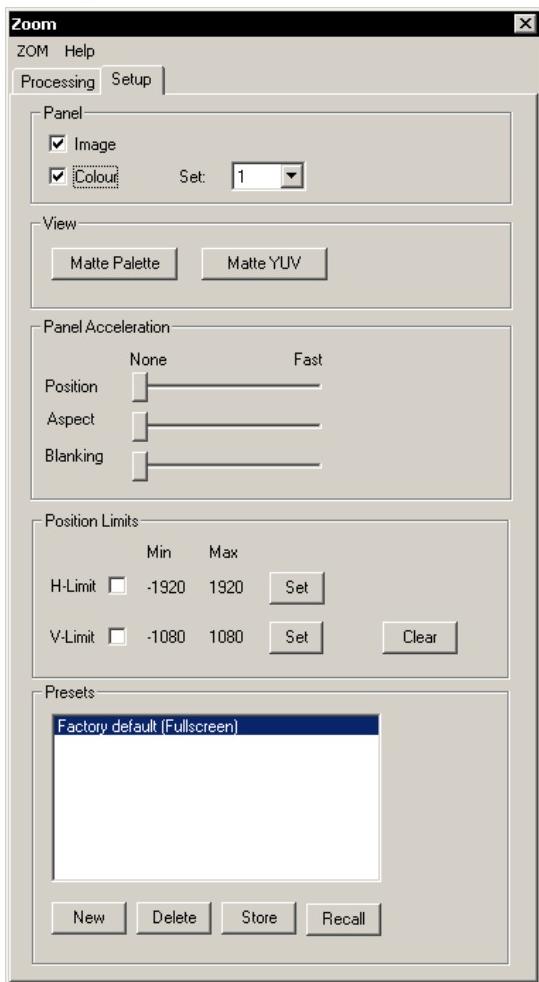
Panel

Determines if the Image and/or the Colour panel are to be used for controlling the ZOM. The colour panel can also provide differents sets of layouts for the programmable function keys depending on selected option.

When Colour is selected the rings, normally operating Primary Master controls, are assigned to the ZOM according to the picture below.

Additionally, the trackball backlight (if enabled in the User Profile) will turn yellow when the ZOM controls are enabled.
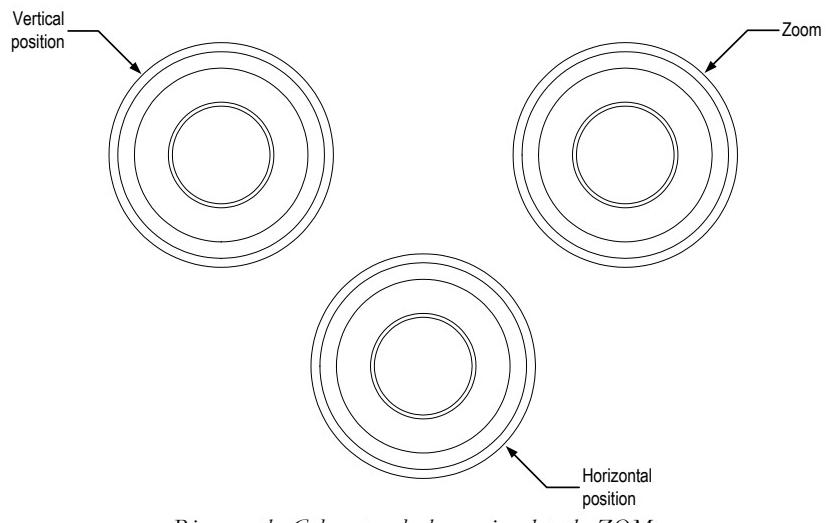
*Rings on the Colour panel when assigned to the ZOM*

Panel Acceleration

The panel acceleration sets the acceleration/sensitivity of the ZOM controls provided on the Image panel.

These settings are stored in the User Profile.

Matte

In addition, as described earlier, the Blanking colour can be set with RGB or YUV values to provide other colours than black.

Click on the Matte Palette button to choose from the Windows palette or set a colour in RGB values. Alternatively, click on the Matte YUV button to set the colours in YUV values.

Limits

Typically in pan-and-scan applications, there might be a need to limit how far it is possible to move the image in both directions.

To e.g. set Horizontal limits, first position the picture to the left limit and click on set. Then position the picture to the right limit and click on set again. Finally activate the limits with the checkbox to the left.

Limits can be restored to default settings (maximum range) by clicking on the Clear button.

Presets

The ZOM dialogue provides the possibility to store presets for the commonly used aspect ratios to be reused in other projects. These presets are available at all times and for all users.

Setting the Preset as Unity

After defining/loading a preset to be used in a project, it is recommended to store the settings as unity. In the ZOM menu, select Unity > Store.

25. Miscellaneous DVNR controls

Test Pattern
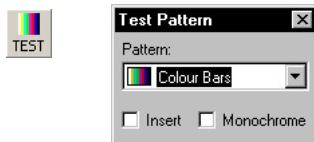
Test window

The test patterns are located on the input interface board of the DVNR and can be used for alignment and troubleshooting e.g.:

Colour Bars: Aligning DAC board

Ramp: Checking for bit errors

Pattern
Selects one of the internal test patterns (test button will show the selected pattern)

Insert
Inserts 64 lines of the selected test pattern on top of the input picture.

Monochrome
Sets video to black/white (colour difference signals set to 128, 8 bit notation).

Blanking
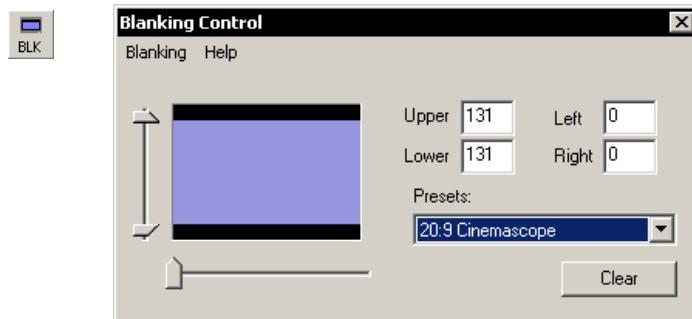
Blanking window for DVNR500 and DVNR1000
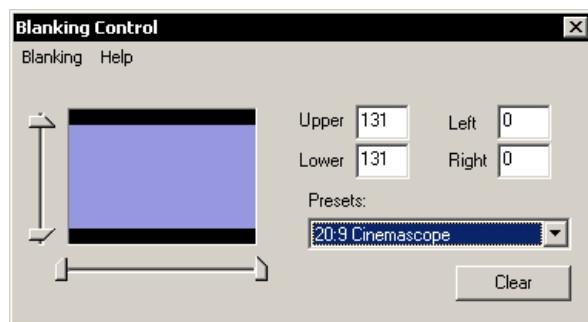
Blanking window for DVNR1000-HD RGB

Vertical re-blanking

Vertical re-blanking is a standard feature of the Digital Vision image processing system and independent **Upper** and **Lower** blanking is supported. This is particularly useful e.g. after Colour Correction of wide screen formats or after Image Stabilisation. Several preset formats are selectable as well as possibility for customisation.

Horizontal re-blanking

Horizontal re-blanking adjustment in the range of 0 to 15 pixels (on each side).

The DVNR1000-HD RGB provides fully adjustable and separate left and right blanking.

Presets

A number of pre-defined blankings are available at your disposal.

Select *Custom* to set a blanking that does not exist as a Preset.

26. Image Panel

About the Image Panel

The Image panel handles the list management of the Valhall system as well as controlling Noise Reduction, Scratch Concealment and other options (except Colour Correction operations requiring trackballs).

Controls

Display

Page selection

Key Area setup

A/Main

B/Key

Menu selection

Wipe keys

Wipe wheel

Up/Down keys

Page selection

Mode selction

Programmable Function keys

Trackball keys

Valhall key

List operation

Integrated Trackball
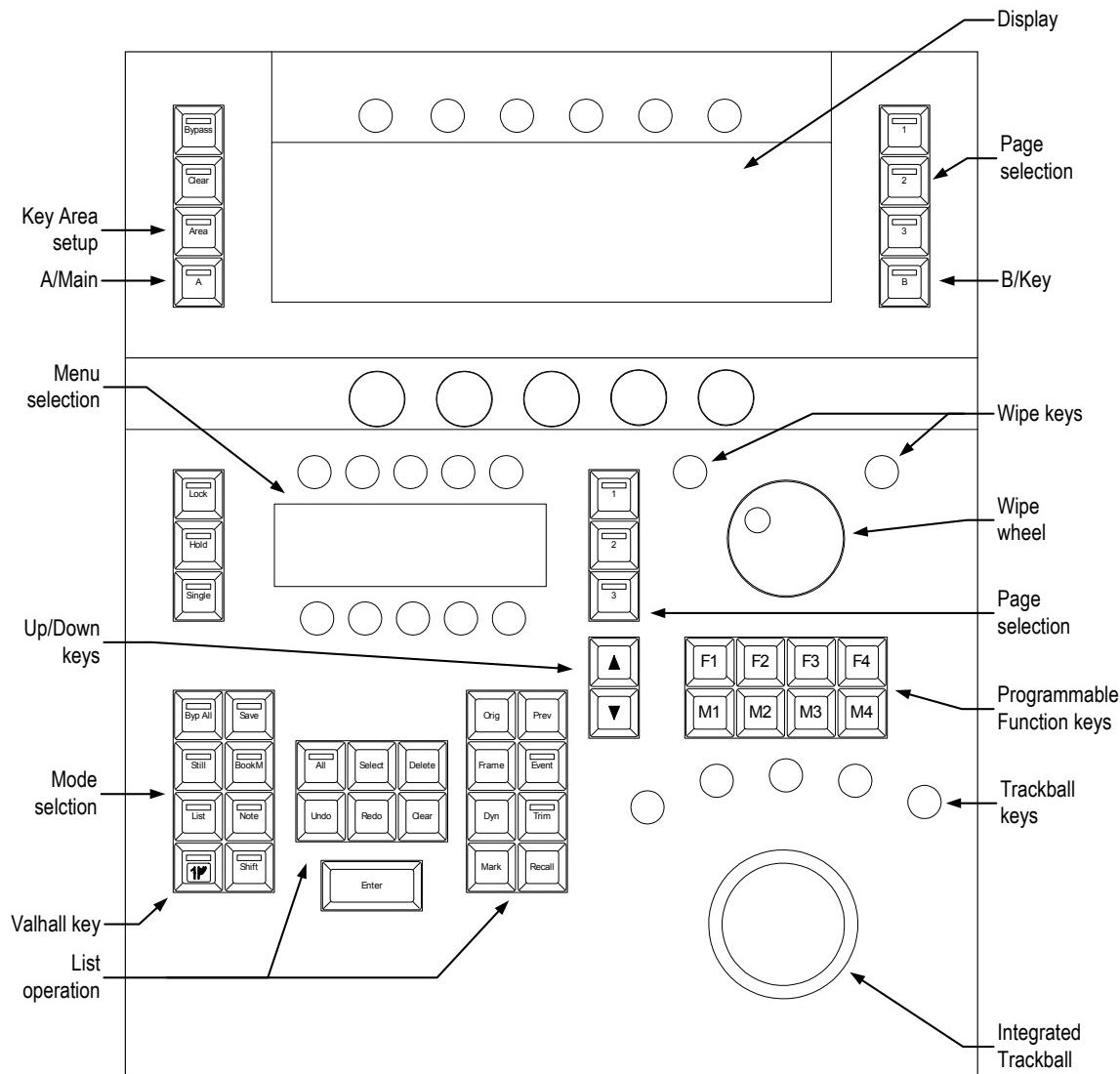
See Appendix A, Panel Keyboard Reference for detailed information on available keyboard commands

Keys

Most keys have a built-in LED that shows the status.

The brightness can be set in the User Profile window under the Panels page (see page 88).

Knobs

Each knob has a built in push-button switch, which is mostly used for clearing the parameter corresponding to the knob. To clear, the knob has to be held down for a longer period of time (determined by the User Profile).

Tip! Each processing window provides an acceleration setting for the controls used (trackball, rings or knobs).

Display

As there is no panel-print for the different functions/parameter accessible from the knobs and buttons, labels and values are shown on the display.

Activated functions will be shown as a box with the text inverted

Tip! You can change the brightness of all displays under the Panels page in the User Profile dialogue.

Menu Selection

Use the keys above and below the smaller menu selection display to select the processing option to control. Normally this operation also opens the processing window in the GUI (if enabled under the Panels Page in the User Profile dialogue). Press and hold to close the window.

If options will not fit on the display, use the Page selection (1-3) keys. Press and hold a page selection key to close all processing windows on that page.

Tip! By pressing the Valhall key followed by a Menu Selection key, bypass will be toggled for the corresponding processing option. To clear or set the processing option to unity, first press the Shift key and then the Menu Selection key.

Mode Selection

Most keys on the Image panel are assigned for List operation. However, these keys can also be used for Notes, Bookmarks and Still store operation. This is determined by the Mode selection keys.

List	Note	Still	BookM
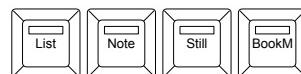
The mode is shown in the status bar.

Note! Note, Bookmark and Still mode are normally chosen by just pressing the corresponding key. However, if the mode keys have been set up for "Direct store" in the Panels section of the user profile, the mode is chosen by pressing the Valhall key followed by the mode key.

Read more about Direct store on page 89.

Up/Down keys

These generic keys are assigned to various types of navigation depending on the mode selected.
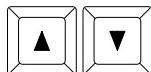
Wipe Wheel

This generic high-resolution wheel can be assigned to various operations depending on the mode selected.

Wipe Keys

The Wipe keys are associated to the mode and function of the Wipe wheel.

List Operation keys

The List operation keys allow you to control and modify the event list and timeline.

Most of the List operation keys can be assigned for Notes, Bookmark or Still store operation.

Programmable Function keys

Pre-defined functions can be mapped to the programmable function keys. Modifier keys Valhall and Shift can be used to access another three sets of functions.

Labels F1-F4 and M1-M4 does not restrict the key usage to functions and memories.

The function keys are defined in the User Profile window under Image keys (see page 91).
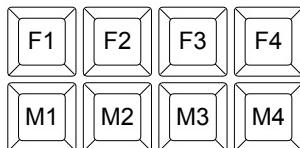
Processing Controls

The controls surrounding the larger display are used for processing controls. Page selection keys 1 – 3 are used when more controls are available than will fit on one page.

The Area key can be pressed to access the Area key controls for certain processing options.

When an Area is enabled, keys A and B will switch between Main (A) and Key (B) processing controls.
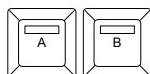
The Bypass key is used to set the processing to electronic bypass.

When pressing the Clear key, the settings for the selected page will be cleared (set to unity). Press and Hold to clear all settings for the selected option.

Modifier keys

The modifier keys (Valhall, Shift & All) provide additional functionality when used together with other keys. A modifier key is either pressed and released before selecting the second key or held wild pressing the second key.
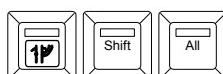
Trackball

The trackball, with the five corresponding buttons (layout for both left- and right-handed persons), is mainly used to navigate in the Windows environment. The button closest to the middle and the button furthest away are compatible with the standard two-button mouse. Use your thumb to move the trackball.

The middle button is used to activate the eye-dropper of the ACP secondary.

27. Media Panel

About the Media Panel

The Media panel supports the standard functions of a tape machine, is used for numerical entries and operates connected to the Image panel.

Controls
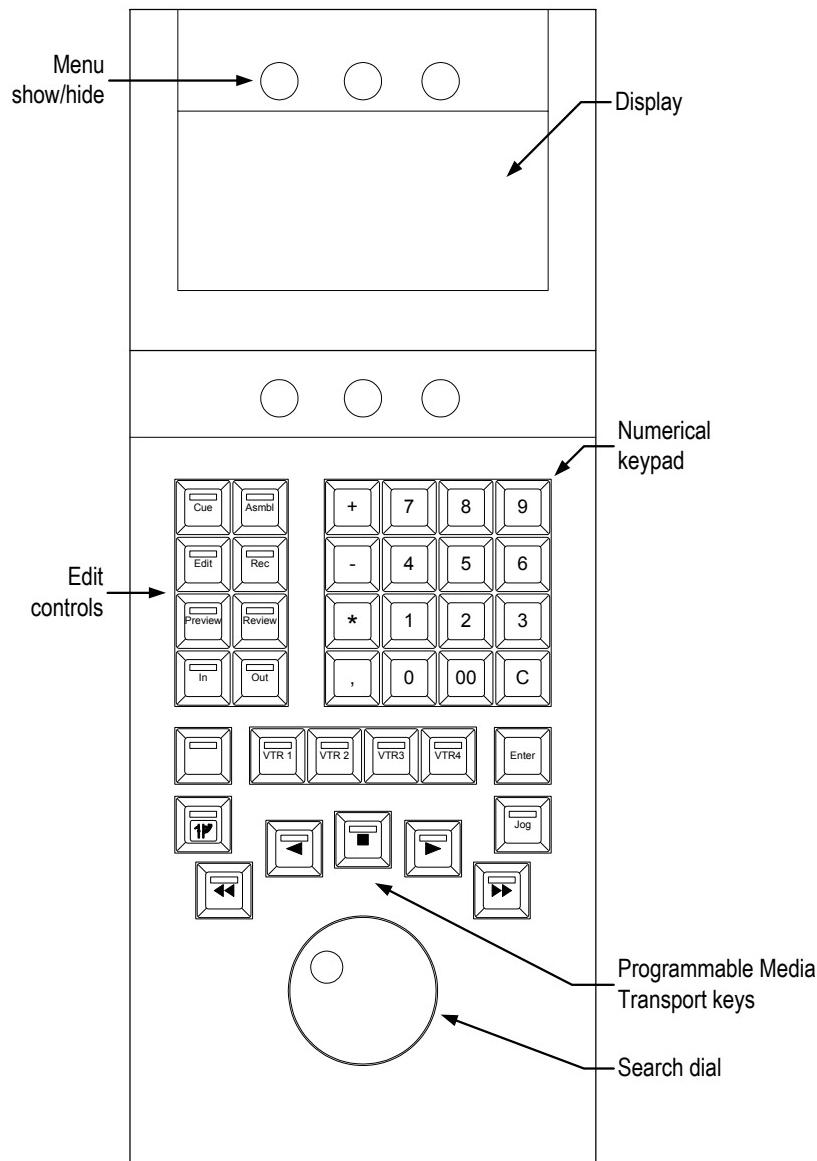
See Appendix A, Panel Keyboard Reference for information on available keyboard commands.

Keys

Most keys have a built-in LED that shows the status.

The brightness can be set in the User Profile window under the Panels page (see page 88).

Display

The display normally shows the current position (timecode) and status of the VTRs.

The brightness of the display can be changed under Panels in the User Profile (see page 88).

Menu show/hide

The keys around the display provide additional functionality for machine control and editing. To show the top menu, press the Media panel menu key as shown below.

```
  ●    ○    ○
┌─────────────────────┐
│ ▼                   │
│ VTR1  00:01:25:02   │
│ VTR2  00:25:25:02   │
│ VTR3  01:00:07:11   │
│ VTR4  01:00:07:12   │
│                     │
└─────────────────────┘
  ○    ○    ○
```
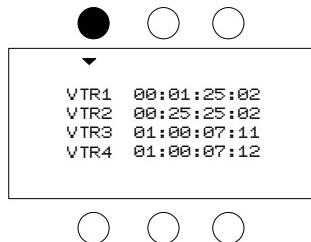
The display will now reveal the top menu. This menu view can be left on the display, as it will not interfere with other functionality.

```
  ○    ○    ○
┌─────────────────────┐
│ ▲    Edit   Cue     │
│ VTR1  00:01:25:02   │
│ VTR2  00:25:25:02   │
│ VTR3  01:00:07:11   │
│ VTR4  01:00:07:12   │
│                     │
└─────────────────────┘
  ○    ○    ○
```
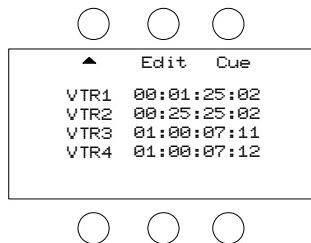
To exit and go back to the original state from any menu level, press the menu key again.

Tip! The menu items (e.g. Edit, Cue) can be accessed directly from the top level without pressing the menu key first.

Numerical Keypad

The numerical keypad is mainly used to enter numbers or timecode for specific operation. Normally the number/timecode is entered before applying the operation thus reducing the number of keystrokes.

Absolute and Relative Entries

Both absolute (unsigned) and relative (signed) entries are supported for most operations. The "+" and the "-" keys are used for relative entries.

Field selection

The key with the asterisks (*) toggles field 1 and 2 for timecode entries. An asterisk means field 2.

```
┌───┐
│ * │
└───┘
```

Clear

The Clear key (C), when pressed, deletes the last entered digit. To clear the whole entry, press and hold.

```
┌───┐
│ C │
└───┘
```

Tip! Leading zeros does not have to be typed in. E.g. 2:21 corresponds to timecode 00:00:02:21.

Tip! To further reduce the number of keystrokes, +1 or -1 can be entered just by pressing "+" or "-" before performing the operation.

Valhall key

The Valhall key is a modifier key (along with Shift and All keys on the Image panel) that provides additional functionality when used together with other keys. The Valhall key is either pressed and released before selecting the second key or held wild pressing the second key.

Programmable Media Transport controls

Under the tab Media keys in the User Profile, you can select how the media transport controls will behave.

The Valhall key provides a second set of programmable transport controls.

Edit Controls

The Edit controls are used to set in- and out-points, perform editing and more.

Cue

Cues up the machine to a specified timecode. Just pressing the key will cue up the machine to the event in focus. You can also enter a timecode from the numeric keyboard (see Entering Timecode from Keyboard) and press Cue.

Search Dial

To support the normal jog and shuttle operation of a VTR (or another machine), there is a Search dial mounted in the panel. To toggle jog and shuttle mode, push the dial or press the Jog key.

Acceleration levels can be set separately for Jog and Shuttle on the VTR page of the User Profile (see page86).

Tip! Changing jog/shuttle mode by pushing the dial can be inhibited by enabling the control "Disable change of Jog/Shuttle from dial" on the VTR page in the User Profile.

28. Colour Panel

About the Colour Panel

The Colour control panel is dedicated for Colour Grading with programmable function keys within easy reach from the large and comfortable trackballs.

Controls
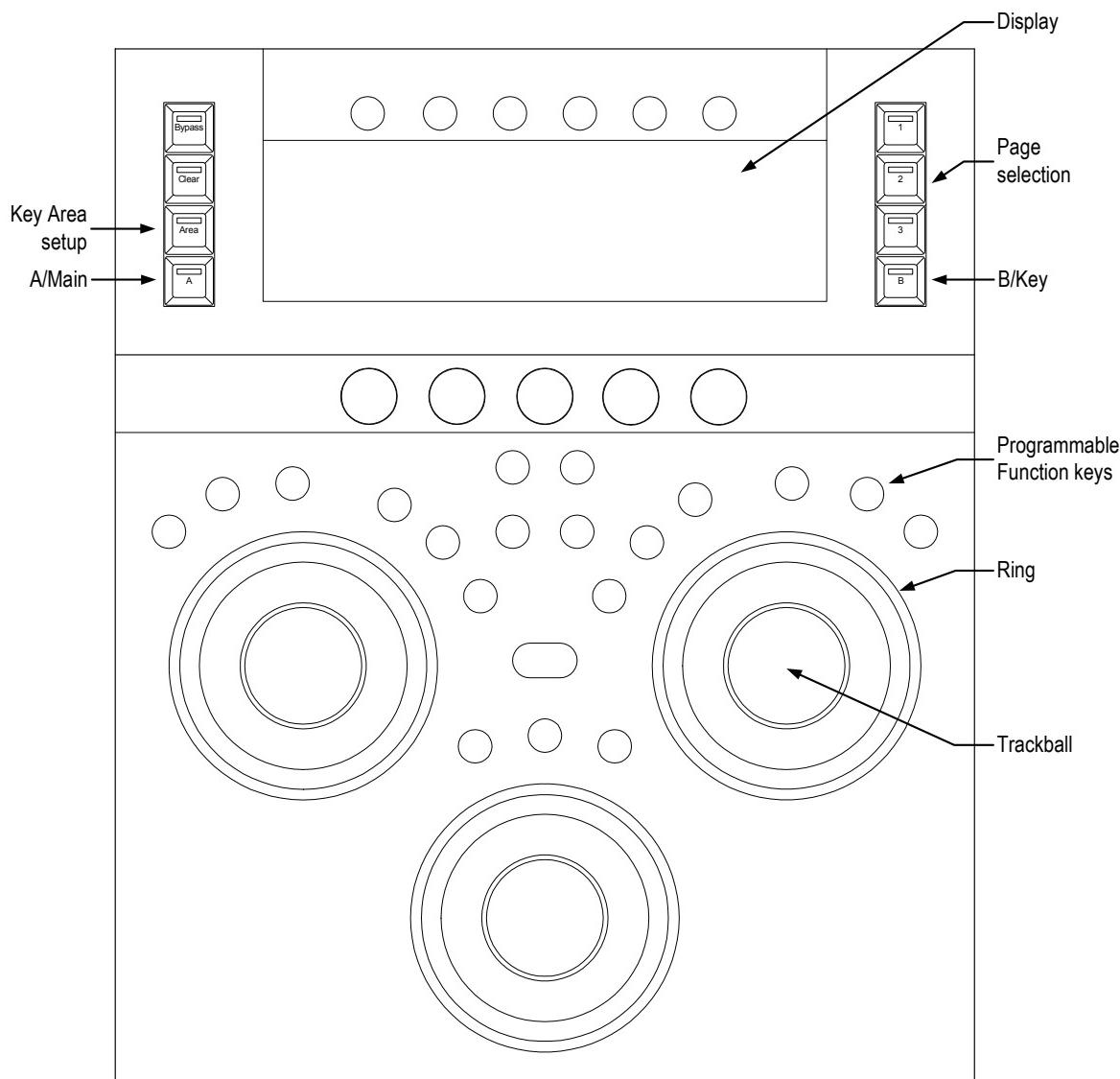
Keys

Some keys have a built-in LED that shows the status (enabled or disabled).

The brightness of these LEDs can be set in the User Profile window under the Panels page (see page 88).

Knobs

Each knob has a built in push-button switch, which is mostly used for clearing the parameter corresponding to the knob. To clear, the knob has to be held down for a longer period of time (determined by the User Profile). It is actually when the user releases the knob that the clear takes place.

Trackballs

When controlling the RGB controls of the primary from a trackball, the ball itself (or rather the backlight LED's) will change colour accordingly if enabled in the Panels section of the User Profile window (see page 88).

The outer ring surrounding the ball affects the luminance (Y) and/or Master RGB (selected in the ACP dialogue), while the ball changes RGB values.

A function to clear/centre an RGB value and/or Y can be programmed on the function keys of the Colour panel.

Tip! Trackball axis can be rotated in the Setup tab of the ACP dialogue for Vector mode, MK-III mode or free rotation.

Tip! Each processing window provides acceleration settings on the Setup tab for the controls used (trackball, rings or knobs).

Tip! Trackball backlight can be disabled under Panels in the User Profile dialogue.

Programmable function keys

The Colour panel provides a large number of programmable function keys within easy reach from the trackballs. They can be programmed individually for each user to perform various operations including memories, machine and list control.

The function keys are defined in the User Profile window under Colour Keys (see page 92).

Tip! To preview the programmed functions without executing them, keep the Valhall key on the Image panel pressed while accessing the function keys. The programmed functions will be displayed on the Colour panel display.

Tip! If you want to have quick-notes on the Colour panel that do not change as other Quick-notes depending on the selected option, there are dedicated Colour Correction Quick-notes for this purpose. These programmable functions are found in the DVNR ACP group and are called Mem 1-6.

Display

As there is no panel-print for the different functions/parameter accessible from the knobs and buttons, labels and values are shown on the display.

Activated functions will be shown as a box with the text inverted

The user can change the brightness of the display in the User Profile dialogue.

Processing Controls

The controls surrounding the larger display are used for processing controls. Page selection keys 1 – 3 are used when more controls are available than will fit on one page.

The Area key can be pressed to access the Area key controls for certain processing options.

When an Area is enabled, keys A and B will switch between Main (A) and Key (B) processing controls.
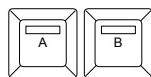
The Bypass key is used to set the processing to electronic bypass.

When pressing the Clear key, the settings for the selected page will be cleared (set to unity). Press and Hold to clear all settings for the selected option.

Appendix A:
Keyboard Shortcut Reference

The following list describes all operations that can be performed from the keyboard.

Key1 + Key2 means that Key1 is pressed before Key2.

Command	Function
Event List	
Arrow up	Go one event back
Arrow down	Go one event forward
Del	Delete current or selected event(s)
Ctrl+z	Undo last list operation
Ctrl+y	Redo last undone operation
Ctrl+a	Select all events
Ctrl+i	Unselect all events
Ctrl+r	Recall settings from current event
Ctrl+f	Find comment
Ctrl+t	Trim
+	Trim current or selected events(s) plus one frame
-	Trim current or selected event(s) minus one frame
F1	Help
F2	Insert comment at selected event
F3	Find next comment
Ins	Insert event at entered timecode
Page Up	Scroll one page back
Page Down	Scroll one page forward
Home	Place list cursor at first event

Command	Function
End	Place list cursor at last event
Ctrl+ArrowUp	Go one event back an recall settings
Ctrl+ArrowDown	Go one event forward an recall settings
Shift+ArrowUp	Select current event and move cursor one step up
Shift+ArrowDown	Select current event and move cursor one step down
Space	Toggle selection at current event
Ctrl+left-click	Toggle selection at current event
Shift+left-click	Select a range of events

Timeline

Command	Function
Arrow up	Go one event back
Arrow down	Go one event forward
Del	Delete current or selected event(s)
Ctrl+z	Undo last list operation
Ctrl+y	Redo last undone operation
Ctrl+a	Select all events
Ctrl+i	Unselect all events
Ctrl+r	Recall settings from current event
Ctrl+t	Trim
+	Trim current or selected events(s) plus one frame
-	Trim current or selected event(s) minus one frame
F1	Help
Ins	Insert event at entered timecode
Ctrl+ArrowUp	Go one event back an recall settings
Ctrl+ArrowDown	Go one event forward an recall settings
Shift+ArrowUp	Select current event and move cursor one step up
Shift+ArrowDown	Select current event and move cursor one step down
PageUp	Scroll one page back
PageDown	Scroll one page forward
Home	Place list cursor at first event
End	Place list cursor at last event
Space	Toggle selection at current event
Ctrl+left-click	Toggle selection at current event
Shift+left-click	Select a range of events

Command	Function
Bookmarks	
Arrow up	Go one bookmark back
Arrow down	Go one bookmark forward
Ins	Insert bookmark at current position
Del	Delete selected bookmark
Ctrl+q	Cue to selected bookmark
F1	Help
F2	Insert comment at selected bookmark
Notes	
Arrow up	Go one note back
Arrow down	Go one note forward
Enter	Store settings at selected note
Del	Delete selected note
Ctrl+r	Recall selected note
Ctrl+q	Cue to selected note
Ctrl+l	List view
Ctrl+t	Thumbnail view
F1	Help
F2	Insert comment at selected note
Stills	
Arrow up	Go one still back
Arrow down	Go one still forward
Enter	Store still at selected position
Del	Delete still at selected position
Ctrl+q	Cue to selected still
F1	Help
F2	Insert comment at selected still

Appendix B:
Panel Keyboard Reference

The following list describes all operations that can be performed from the control panels.

-x	Press and Hold
#	Unsigned Numerical entry
±#	Signed Numerical entry (offset)
[±]#,[±]#	Range, unsigned or signed combined
TC	Unsigned Timecode entry
±*TC*	Signed (offset) Timecode entry

Key-X means that the key is kept pressed for an extended duration (press and hold), either to give the key two functions or to prevent accidental activation.

 # + key means numerical input made with the keypad on the Media panel prior to pressing the function key.

Key1 + Key2 means that Key1 is pressed before Key2 alternatively Key1 is held while pressing Key2.

Command	Function
All	A Key used in combination with other keys to group elements
Shift	A Shift Key used in combination with other keys to provide extended functionality
Valhall	An Alt Key used in combination with other keys to provide alternate functions
List	Open Primary List window and assign certain keys for List operations
List-*x*	Close Primary List window
Valhall+List	Open Secondary List window
Valhall+List-*x*	Close Secondary List window

Command	Function
Note	Normal mode: Open Note window and assign certain keys for Note operations
	Direct store mode: Store Note at next available position
Note-*x*	Close Note window and return to List mode
Valhall+Note	Normal mode: Store Note at next available position
	Direct store mode: Open Note window and assign certain keys for Note operations
Valhall+Note-*x*	Close Note window and return to List mode
Shift+Note	Switch between Note sets
#+Note	Recall Note no.
#+Note-*x*	Save Note no.
Still	Normal mode: Open Still window and assign certain keys for Still store operations
	Direct store mode: Grab a still and save it at the next free location
Still-*x*	Close Still window and return to List mode
Valhall+Still	Normal mode: Grab a still and save it at the next free location
	Direct store mode: Open Still window and assign certain keys for Still store operations
Valhall+Still-*x*	Close Still window and return to List mode
#+Still	Recall Still from position no.
#+Still-*x*	Save Still at position no.
BookM	Normal mode: Open the Bookmark window and assign certain keys for Bookmark operations
	Direct store mode: Insert Bookmark at current timecode
BookM-*x*	Close the Bookmark window and return to List mode
Valhall+BookM	Normal mode: Insert Bookmark at current timecode
	Direct store mode: Open the Bookmark window and assign certain keys for Bookmark operations
Valhall+BookM-*x*	Close the Bookmark window and return to List mode
#+BookM	Go to Bookmark no.
±#+BookM	Go back or forward a no. of Bookmarks
TC+BookM-*x*	Insert Bookmark at entered timecode
±*TC*+BookM-*x*	Insert Bookmark at current timecode +/- entered offset
Select	Select current event
Select-*x*	Unselect current event
[±]#,[±]#+Select	Select a range of events
All+Select	Select all events
All+Select-*x*	Unselect all events
Valhall+Select	Invert selection

Command	Function
Delete	List: Delete selected event(s) Note: Delete selected note Bookmark: Delete selected bookmark Still: Delete selected still
All+Delete	List: Delete all events Note: Delete all notes Bookmark: Delete all bookmarks Still: Delete all stills
#+Delete	List: Delete entered event Note: Delete entered note Bookmark: Delete entered bookmark Still: Delete entered still
[±]#,[±]#+Delete	List: Delete a range of events Note: Delete a range of notes Bookmark: Delete a range of bookmarks Still: Delete a range of stills
Clear	List: Clear selected event(s) from settings Note: N/A Bookmark: N/A Still: N/A
#+Clear	List: Clear entered event Note: N/A Bookmark: N/A Still: N/A
[±]#,[±]#+Clear	List: Clear a range of events Note: N/A Bookmark: N/A Still: N/A
Up	List (Normal): Go one event back List (Recall on scoll): Go one event back an recall settings Note: Go back one note Bookmark: Go back one bookmark Still: Go back one still
Valhall+Up	List (Normal): Go one event back and recall settings List (Recall on scroll): Go one event back Note: Go back one note and recall settings Bookmark: Cue to previous bookmark Still: Go back one still and recall
Shift+Up	List: Go one event back and select event Note: N/A Bookmark: N/A Still: N/A
Down	List (Normal): Go one event forward List (Recall on scoll): Go one event forward an recall settings Note: Go forward one note Bookmark: Go forward one bookmark Still: Go forward one still
Valhall+Down	List (Normal): Go one event forward and recall settings List (Recall on scroll): Go one event forward Note: Go forward one note and recall settings Bookmark: Cue to next bookmark Still: Go one still forward and recall
Shift+Down	List: Go one event forward and select event Note: N/A Bookmark: N/A Still: N/A

Command	Function
Enter	List: Set selected event(s) if changed Note: Save settings at selected note Bookmark: Insert Bookmark at current timecode Still: Save still at selected position
Enter-*x*	List: Update thumbnail at the current event Note: N/A Bookmark: N/A Still: N/A
#+Enter	List: Set entered event Note: Store settings at entered note Bookmark: N/A Still: Store still at entered position
TC+Enter	List: N/A Note: N/A Bookmark: Insert Bookmark at entered timecode Still: N/A
±*TC*+Enter	List: N/A Note: N/A Bookmark: Insert Bookmark at current timecode +/- offset Still: N/A
All+Enter	List: Program all settings at selected event(s) Note: N/A Bookmark: N/A Still: N/A
Recall	List: Recall settings from current event (except those locked) Note: Recall settings from selected note (except those locked) Bookmark: Cue to selected bookmark Still: Recall selected still
#+Recall	List: Recall settings from event no. Note: Recall settings from note no. Bookmark: Cue up to bookmark no. Still: Recall still no.
±#+Recall	List: Recall settings from current event +/- entered offset Note: Recall settings from current note +/- entered offset Bookmark: Cue up to current bookmark +/- entered offset Still: Recall still from current position +/- entered offset
#+Valhall+Recall	List: N/A Note: N/A Bookmark: N/A Still: Recall still no. as an overlay
±#+Valhall+Recall	List: N/A Note: N/A Bookmark: N/A Still: Recall still from current position +/- entered offset as an overlay
All+Recall	List: Recall all settings from current event Note: Recall all settings from selected note Bookmark: N/A Still: N/A
Mark	List: Create an empty event at current timecode Note: N/A Bookmark: Insert Bookmark at current timecode Still: N/A

Command	Function
Mark-*x*	List: Create an event at current timecode and store settings Note: N/A Bookmark: N/A Still: N/A
TC+Mark	List: Create an empty event at entered timecode Note: N/A Bookmark: Insert Bookmark at entered timecode Still: N/A
TC+Mark-*x*	List: Create an event at entered timecode and store settings Note: N/A Bookmark: N/A Still: N/A
±*TC*+Mark	List: Create an empty event at current timecode +/- offset Note: N/A Bookmark: Insert Bookmark at current timecode +/- offset Still: N/A
±*TC*+Mark-*x*	List: Create an event at current timecode +/- entered offset and store settings Note: N/A Bookmark: N/A Still: N/A
Dyn	Set a linear dynamic transition between selected event and the earlier programmed event, toggle curve type each time pressed
Dyn-*x*	Remove dynamic transition that ends at selected event
Trim	List: Trim the active event to current timecode Note: N/A Bookmark: N/A Still: Enables positioning from the trackball of the selected still sizing and additional sizing from the wipe wheel in overlay mode
Trim-*x*	List: N/A Note: N/A Bookmark: N/A Still: Restores still position
TC+Trim	Trim the active event to the entered timecode
±*TC*+Trim	Trim the timecode of selected event(s)
Valhall+Trim	Opens the Parameter Trim (aka Global Adjust) dialogue.
#+Trim	List: N/A Note: N/A Bookmark: N/A Still: Sets scale of still in percent (%)
Undo	Undo last list entry
Valhall+Undo	Open the History list
Valhall+Undo-*x*	Close the History list
Redo	Redo last undone entry
Save	Quick-save of the list
Save-*x*	Saves the list
Frame	Mark and Set an one-frame event

Command	Function
Valhall+Frame	Preview current frame once
Valhall+Frame-*x*	Preview current frame in loop-mode
Event	Positions the list cursor at the event where the VTR/Disk is located
Event-*x*	Cue source machine to selected event
#+Event	Positions the list cursor at entered event no.
#+Event-*x*	Cue up to entered event no.
±#+Event	Positions the list cursor at current event +/- entered offset
±#+Event-*x*	Cue up to the position of the list cursor +/- entered offset
Valhall+Event	Preview current event once
Valhall+Event-*x*	Preview current event in loop-mode
All+Event-*x*	Cue all machines to selected event
Byp All	Toggle Bypass for all processing
Byp All-*x*	Force Bypass all off
Valhall+Byp All	Toggle Autoshot
Valhall+Byp All-*x*	Force Autoshot off
Lock	Locks selected option in the list
All+Lock	Locks all options
All+Lock-*x*	Unlocks all options
Single	Locks everything but the selected option in the list
Hold	Holds the selected option in the list
Hold-*x*	Forces Hold off on the selected option
All+Hold	Holds all option in the list
All+Hold-*x*	Removes hold from all options
Cue	List: Cue up to selected event Note: Cue up to the timecode of the selected note Bookmark: Cue up to selected bookmark Still: Cue up to the timecode of the selected still
TC+Cue	Cue up to entered timecode
±*TC*+Cue	Cue up to +/- entered timecode offset
All+Cue	Cue up all machines to selected event
TC +All+Cue	Cue up all machines to entered timecode
±*TC* +All+Cue	Cue up all machines to +/- entered timecode offset
<blank>	Programmable function key
VTR1 – VTR4	Programmable function keys
All+VTR1 – VTR4	Cue up all machines to selected machine
<Fast Forward>	Programmable function key
#+<Fast Forward>	Go forward a no. of events

Command	Function
\<Play\>	Programmable function key
TC+\<Play\>	Cue forward to unsigned timecode offset
\<Stop\>	Programmable function key
All+\<Stop\>	Stop all machines
\<PlayRev\>	Programmable function key
TC+\<PlayRev\>	Cue backward to unsigned timecode offset
\<Rewind\>	Programmable function key
#+\<Rewind\>	Go back a no. of events
Asmbl-*x*	Toggle Assemble and Insert editing modes
Asmbl	Switch off Assemble and go to Insert mode
Edit-*x*	Start autoedit
Valhall+Edit	Open the Edit dialogue
Valhall+Edit-*x*	Close the Edit dialogue
Rec-*x*	Craschrecording
Preview	Preview entered edits
Review	Review previous edits on the recorder
In	Set in-point at current machine position
In-*x*	Clear in-point
TC+In	Set in-point at entered timecode
±*TC*+In	Adjust in-point by entered timecode offset
TC+In-*x*	Set duration (out-point to in-point plus entered timecode)
Valhall+In	Set reference point of the selected machine at current machine position (ganging)
Valhall+In-*x*	Clear reference point of the selected machine (ganging)
TC+Valhall+In	Set reference point of the selected machine at entered timecode (ganging)
All+In	Cue all machines to their respective in-point
Out	Set out-point at current machine position
Out-*x*	Clear out-point
TC+Out	Set out-point at entered timecode
±*TC*+Out	Adjust out-point by entered timecode offset
TC+Out-*x*	Set duration (in-point to out-point minus entered timecode)
All+Out	Cue all machines to their respective out-point
Orig	Returns the original settings from the event
Prev	Recall previous settings
1 – 3	Page selection
1 – 3-*x*	Close all windows related to the page selection

Command	Function
Valhall+1 – 3	Bypass processing related to the page selection
Shift+1 – 3	Clear processing settings related to the page selection
F1 – F4	Programmable Function keys
M1 – M4	Programmable Function keys
Wipe wheel	List: Browse Timeline or Event List Note: Browse notes Bookmark: Browse bookmarks Still: Wipe between still and live video
Valhall+Wipe wheel	List: N/A Note: N/A Bookmark: N/A Still: Position still horisontally
Shift+Wipe wheel	List: N/A Note: N/A Bookmark: N/A Still: Position still vertically
Wipe key left	List: Zoom in Note: Go to first note Bookmark: Go to last note Still: Toggle H/V wipe
Wipe key right	List: Zoom out Note: Go to last note Bookmark: Go to last bookmark Still: Flip wipe

Panel display commands

1 – 3	Page selection
A	Selects control of Main area
Area	Key area setup
B	Selects control of Key area
Bypass	Bypass of selected processing option
Clear	Clears shown settings for selected processing option
Clear-*x*	Clears all settings for selected processing option

Bookmark Command Reference

The following list describes all Bookmark operations that can be performed from the control panels. The checkmark (✔) indicates commands that only are available in Bookmark mode. All other commands can be used at all times.

Bookmark mode only	Command	Function
	BookM	Normal mode: Open the Bookmark window and assign certain keys for Bookmark operations
		Direct store mode: Insert Bookmark at current timecode
	BookM-*x*	Close the Bookmark window and return to List mode
✔	Valhall+BookM	Normal mode: Insert Bookmark at current timecode
		Direct store mode: Open the Bookmark window and assign certain keys for Bookmark operations
✔	Valhall+BookM-*x*	Close the Bookmark window and return to List mode
	#+BookM	Cue to Bookmark no.
	±#+BookM	Cue back or forward a no. of Bookmarks
	TC+BookM-*x*	Insert Bookmark at entered timecode
	±*TC*+BookM-*x*	Insert Bookmark at current timecode +/- entered offset
✔	Enter	Insert Bookmark at current timecode
✔	*TC*+Enter	Insert Bookmark at entered timecode
✔	±*TC*+Enter	Insert Bookmark at current timecode +/- entered offset
✔	Mark	Insert Bookmark at current timecode
✔	*TC*+Mark	Insert Bookmark at entered timecode
✔	±*TC*+Mark	Insert Bookmark at current timecode +/- entered offset
✔	Delete	Delete selected bookmark
✔	#+Delete	Delete entered bookmark
✔	[±]#,[±]#+Delete	Delete a range of bookmarks
✔	All+Delete	Delete all bookmarks
✔	Recall	Cue to selected bookmark
✔	#+Recall	Cue to bookmark no.
✔	±#+Recall	Cue to current bookmark +/- entered offset
✔	Up	Go back one bookmark
✔	Valhall+Up	Cue to previous bookmark
✔	Down	Go forward one bookmark
✔	Valhall+Down	Cue to next bookmark
✔	Cue	Cue to selecte bookmark

Bookmark mode only	Command	Function
✔	Wipe wheel	Browse through bookmarks
✔	Wipe key left	Go to first bookmark
✔	Wipe key right	Go to last bookmark

Note Command Reference

The following list describes all Note operations that can be performed from the control panels. The checkmark (✔) indicates commands that only are available in Note mode. All other commands can be used at all times.

Note mode only	Command	Function
	Note	Normal mode: Open Note window and assign certain keys for Note operations
		Direct store mode: Store Note at next available position
	Note-*x*	Close Note window and return to List mode
✔	Valhall+Note	Normal mode: Store Note at next available position
		Direct store mode: Open Note window and assign certain keys for Note operations
✔	Valhall+Note-*x*	Close Note window and return to List mode
	Shift+Note	Switch between Note sets
	#+Note	Recall Note no.
	#+Note-*x*	Save Note no.
✔	Delete	Delete selected note
✔	#+Delete	Delete note no.
✔	±#+Delete	Delet note at current position +/- entered offset
✔	[±]#,[±]#+Delete	Delete a range of notes
✔	All+Delete	Delete all notes
✔	Enter	Save settings at selected note
✔	#+Enter	Save settings at note no.
✔	±#+Enter	Save settings at current note +/- entered offset
✔	Recall	Recall settings from selected note (except those locked)
✔	All+Recall	Recall all settings from selected note
✔	#+Recall	Recall settings from note no.
✔	±#+Recall	Recall settings from current note +/- entered offset
✔	Up	Go back one note

Note mode only	Command	Function
✔	Valhall+Up	Go back one note and recall settings
✔	Down	Go forward one note
✔	Valhall+Down	Go forward one note and recall settings
✔	Cue	Cue to the timecode of the selected note
✔	Wipe wheel	Browse through notes
✔	Wipe key left	Go to first note
✔	Wipe key right	Go to last note

Still Store Command Reference

The following list describes all Still store (optional) operations that can be performed from the control panels. The checkmark (✔) indicates commands that only are available in Still mode. All other commands can be used at all times.

Still mode only	Command	Function
	Still	Normal mode: Open Still window and assign certain keys for Still store operations
		Direct store mode: Grab a still and save it at the next free location
	Still-*x*	Close Still window and return to List mode
✔	Valhall+Still	Normal mode: Grab a still and save it at the next free location
		Direct store mode: Open Still window and assign certain keys for Still store operations
✔	Valhall+Still-*x*	Close Still window and return to List mode
	#+Still	Recall Still from position no.
	#+Still-*x*	Save Still at position no.
✔	Delete	Delete selected still
✔	#+Delete	Delete still no.
✔	±#+Delete	Delete still at current position +/- entered offset
✔	[±]#,[±]#+Delete	Delete a range of stills
✔	All+Delete	Delete all stills
✔	Enter	Save still at selected position
✔	#+Enter	Save still at position no.
✔	±#+Enter	Save still at current position +/- entered offset
✔	Recall	Recall selected still
✔	#+Recall	Recall still no.

Still mode only	Command	Function
✔	±#+Recall	Recall still from current position +/- entered offset
✔	Valhall+Recall	Recall selected still as an overlay
✔	#+Valhall+Recall	Recall still no. as an overlay
✔	±#+Valhall+Recall	Recall still from current position +/- entered offset as an overlay
✔	Trim	Enables positioning from the trackball of the selected still sizing and additional sizing from the wipe wheel in overlay mode
✔	Trim-*x*	Restores still position
✔	#+Trim	Sets scale of still in percent (%)
✔	Cue	Cue up to the timecode of the selected still
✔	Up	Go back one still
✔	Valhall+Up	Go back one still and recall
✔	Down	Go forward one still
✔	Valhall+Down	Go forward one still and recall
✔	Wipe wheel	Wipe between still and live video
✔	Valhall+Wipe wheel	Position still horisontally
✔	Shift+Wipe wheel	Position still vertically
✔	Wipe key left	Toggle H/V wipe
✔	Wipe key right	Flip wipe

Appendix C: Programmable Functions

The following list contains explanations on functions that can be mapped to the function keys on the control panels, which are not self-explanatory or otherwise explained in the manual.

Group	Command	Function
DVNR	ASC TC Freeze	Performs a preroll, plays the source machine and enables ASC Freeze at the point where this function was enabled.
DVNR ACP	Load Mem 1-6 Save Mem 1-6	Colour Correction Quick-notes that do not change as other Quick-notes depending on the selected option
List	Bypass List	"Bypasses" the whole list and does not affect any "Hold" when disabled
	Copy –2 Copy +2	Copy the parameters two events back (Copy –2) or forward (Copy +2)and paste into current. Useful for A/B shots
	Replay	Positions the source machine a couple of seconds before the start of the event and goes into Play
	Return & Set	Returns the List cursor (active event) to the current event (source machine) and sets parameters.
	Set forced	Sets parameters whether changed or not.

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